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Novel Motor Drive in Brass Mill

Flexible Melting Units and Annealing, Pickling,
Drying and Finishing Equipment Are
Other Features

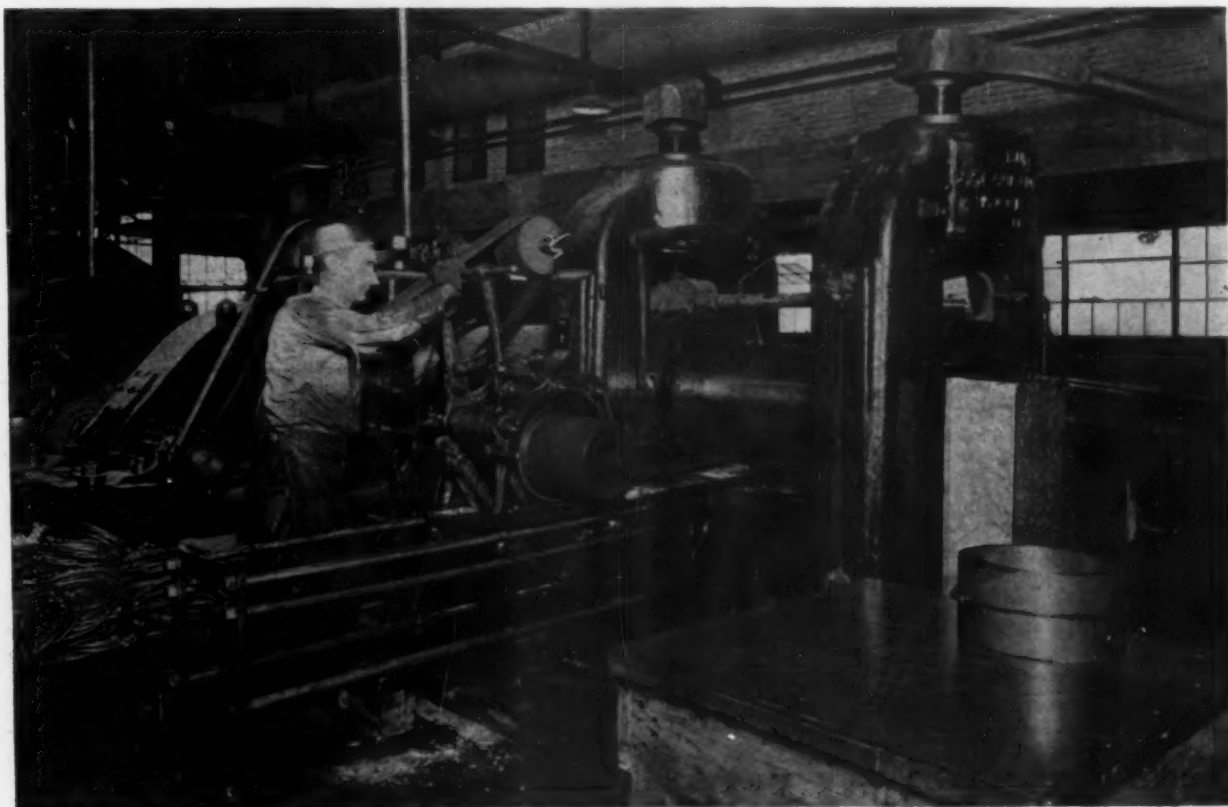
BY GILBERT L. LACHER

THE word "cabbage" brings to mind both palatable and aromatic qualities, and to those with a taste for fiction may also bring reminiscences of Mrs. Wiggs. Offhand, the plebeian product of the truck garden would appear to have little connection with the metal-working industry. Yet the cabbage is an important raw material in brass manufacturing, although in that case the term is applied to a leafy compressed bundle of copper sheet clippings. At its new brass mill, located at 6601 West Grand Avenue, Chicago, the Dallas Brass & Copper Co. makes its own cabbages from pure copper scrap bought from its own customers or delivered from its manufacturing plant.

No cabbages are bought, because of apprehension lest they include foreign materials. As it is, all bales

of scrap received are torn apart and carefully inspected before the cabbages are made. This precaution is necessary because occasionally copper-plated steel may be inadvertently mixed with copper scrap. Any scrap small enough is passed through a magnetic separator, made by the Dings Magnetic Separator Co., Milwaukee, which removes all ferrous material from the cuprous metal. Skimmings from the melting furnaces, also, are put through the separator. Cabbaging is done in a hydraulic press, furnished by Logemann Brothers Co., Milwaukee, which has a capacity of 45,000 lb. of compressed scrap per day. The cabbages measure approximately 7 x 13 x 5 in. and weigh about 50 lb. each. Brass scrap also is used.

In the selection of virgin metals care is exercised.



Finishing Rolls Are Equipped with Blocking Machines to Guide the Metal Around a Block, Forming a Tight Coil. A wire hoop is slipped over the coil to prevent it from spreading again. Each mill is driven by a synchronous motor. So far as is known, a synchronous motor has never before been used for a break-down roll

Only ingot copper analyzing 99.9 per cent is used, most of it being Lake metal. A premium is paid for a high quality of electrolytic slab zinc which has a low lead content, a requisite for making good drawing brass.

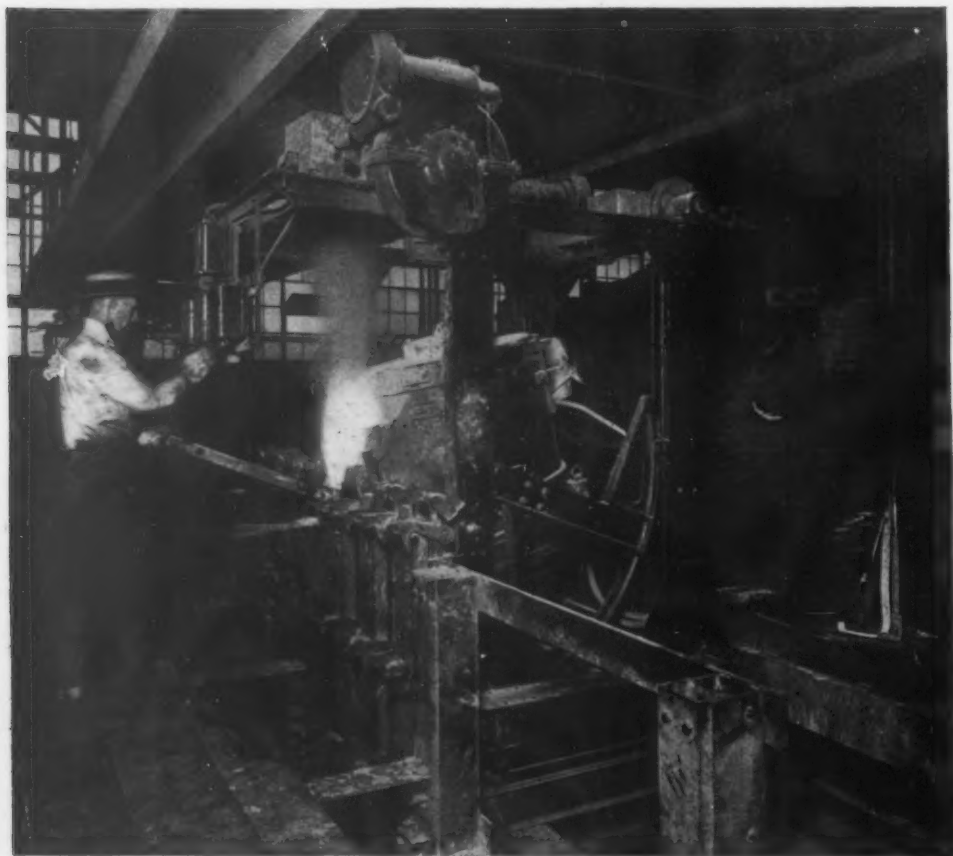
Railroad deliveries of metal are received from a Chicago, Milwaukee & St. Paul siding which parallels a platform on one side of the mill. Material is unloaded from box cars to buggies which are drawn by storage battery tractors down a ramp to the plant floor, where storage bins having a capacity of 2,000,000 lb. have been provided. Incidentally, nearly all material handling in the mill is performed by two storage battery tractors, one of which was supplied by the Baker R & L Co., Cleveland, and the other, of the lift-truck type, by the Crescent Truck Co., Lebanon, Pa.

Two Melting Units

The arrangement for melting is notable for its convenience and unusual flexibility, as well as for its ex-

Metal is poured into knock-down molds made of a special grade of cast iron. As soon as the brass solidifies, hooks holding the molds together are released, freeing the cast bar for removal by means of tongs. The bars range in width from $5\frac{1}{4}$ to $12\frac{3}{4}$ in., in thickness from 1 to $1\frac{1}{2}$ in., and in length from 37 to 60 in. After each cast, the molds are scrubbed with a wire brush and then blown out with compressed air to remove all remaining metal or dirt. Gases generated in the furnace pits are collected in overhanging hoods and released through stacks into the outside atmosphere.

Brass bars must be "gated" before they can be rolled into smaller gages. Gating consists of removing the top of the bar, or gate, in which the piping formed in solidification is to be found. The work is done in a motor-driven alligator shear built by the Canton Foundry & Machine Co., Canton, Ohio. After gating, the bars are thoroughly inspected and those not yet free



Melting Furnace Has Four Adjustments, Each of Which Is Controlled from an Operating Board Suspended from the Pouring Side. The furnace may be moved lengthwise of the pit, crosswise, up and down, and in addition may be tilted for pouring, as in the illustration

cellent equipment. Two parallel furnace pits, 50 ft. long by $10\frac{1}{2}$ ft. wide over all, are the converse of each other, the charging sides of the two pits opening toward an intervening aisle where metal is stored in bins and charges are weighed. There are four Ajax-Wyatt induction furnaces, built by the Ajax Metal Co., Philadelphia, two in each pit. Since these melting units are of the induction type, local overheating and contamination by foreign materials is avoided. The current consumption per furnace is 60 kw. during active operation.

Mounted on a special type of buggy built by the Western Cartridge Co., East Alton, Ill., the furnace has four adjustments, each of which is controlled on an operating board located on the pouring side. The buggy rides on a $5\frac{1}{2}$ -ft. gage track which extends the length of the pit, so that one adjustment is the lengthwise travel of the furnace. Crosswise adjustment is provided for, to bring the furnace close to the charging or pouring side of the pit, as required. The furnace may also be raised or lowered, and for pouring it is tilted. The furnaces, with capacity of 900 lb. each, per charge, are charged either through the top or through a charging door on the back.

from holes are cut again. They are then ready for the mill.

The mill consists of a stand of break-down rolls, a stand of run-down rolls and two stands of finishing rolls. These were all furnished by M. Hoagland Sons Co., Rockaway, N. J., and are driven by synchronous motors built by the Electric Machinery Mfg. Co., Minneapolis.

Synchronous Motors Maintain Power Factor

So far as is known, a synchronous motor has never before been used for a break-down roll, as it has been claimed heretofore that such an application was not practicable. Original plans called for three 250-hp. slip-ring motors and a synchronous condenser to maintain 85 per cent power factor to drive the break-down, run-down and finishing rolls respectively. The provision for the condenser was necessary on account of a ruling of the Illinois Commerce Commission that all motors with a rated capacity of 50 hp. and larger must be synchronous unless a power factor of 85 per cent is maintained. The Electric Machinery Mfg. Co., which supplied all the motors for the plant, found it possible to furnish three 250-hp. synchronous motors with a 90



Cabbages of Copper and Brass Scrap Are Made in a Hydraulic Press with a Capacity of 45,000 Lb. of Compressed Metal per Day. Bales of scrap received in the plant are torn apart and carefully inspected before cabbages are made

per cent leading power factor, running at 50 deg. Cent. on three-phase 60-cycle 440-volt current at 514 r.p.m. The ultimate power factor of the plant as a whole is a resultant of the inductive load of the melting furnaces and induction motors, and the corrective capacity of the mill motors is approximately the same, whether they are running under full load or merely with friction load.

The mill motors are excited from a common d.c.

motor-generator set, and each is provided with automatic starters to start and stop the rolls, one push button being on each roll and another being on the switchboard floor, a balcony situated on one side of the building. Power purchased at 12,000 volts is stepped down to 440 volts for use in the plant.

All the stands are driven by Sykes herringbone gears, furnished by the Farrel Foundry & Machine Co., Buffalo. The break-down rolls have double-reduction



After Annealing, Wagons of Brass Are Rolled Out of the Discharge Doors of the Annealing Furnaces Under a Series of Shower Baths. The flood of water from the showers frees the brass from scale which would otherwise form because of the contact of the metal with iron pans on which the coils rest

gears, which eliminate backlash and make operations practically noiseless. The other stands have single-reduction gears.

The last finishing stand rolls fin-core radiator brass. The finishing rolls are equipped with blocking machines which guide the metal around a block, forming a tight coil. Before a coil is removed from the block, a wire hoop is slipped over it to prevent it from spreading again. Metal rolled in the turn-down stand is sufficiently stiff to coil itself. Hence those rolls are equipped with an ordinary coiling machine. The finishing stands roll both sheets and coils in a wide range of widths and gages.

After the bars have been reduced to a suitable thickness by the break-down rolls, they are scalped in a milling-type overhauling machine constructed by the Torrington Mfg. Co., Torrington, Conn. This machine is equipped with milling cutters which remove the cast

fracture a concrete floor. Around the melting furnaces, however, a concrete surface has been provided, to facilitate shoveling material from the floor.

Metal is conveyed from the rolls to and through the annealing furnaces on the annealing wagons just referred to. Iron pans which rest on the wagons are loaded with the bars or coils to be annealed. After the heat treatment the wagons are rolled out of the discharge doors of the furnaces under a series of shower baths. The flood of water from the showers frees the brass from scale which would otherwise form because of contact with the iron pans. A concrete floor with drains has been provided under the showers.

Ordinarily, the procedure in pickling the metal is to transfer coils from the annealing wagon to a tray suspended from a pneumatic hoist. The tray is lowered into a vat of acid, then raised and transferred to a hot-water bath by the hoist, which operates on a



For Pickling, Coils Are Transferred from the Annealing Wagon to a Tray Suspended from a Pneumatic Hoist (Shown at Extreme Right). The tray is immersed in an acid vat and then is conveyed to a hot water bath. From the water the coils are drawn through sawdust and through a pair of bristle brush rolls, finally being recoiled around a belt-driven block (left foreground)

surface of the bar. The plant is supplied also with reciprocating-type overhauling machines. After scalping, the bars are inspected and all remaining defects are chipped out.

Periodical Annealing Needed

During the course of rolling, the metal must be periodically annealed. There are two double-end oil-fired muffle furnaces, each with two lift doors at each end, or a total of eight doors. The annealing temperatures vary materially, according to the character of the metal treated. For temperature regulation the furnaces are equipped with pyrometer control. A pyrometer is located at the front end and another at the back end of each furnace, an indicator is situated at a convenient point on the adjacent wall and a recorder is in the plant office. The furnaces, built by the W. S. Rockwell Co., New York, have natural draft from the bottom. A motor-driven blower arranged with three air controls is used largely to atomize the oil for combustion. The burners are of the injector type.

The floor adjacent to the furnaces and in the mill room is of wood block. This kind of surface was selected because it is in this section of the plant that the workmen do the most walking. Moreover, it was feared that the heavy wagons used for annealing would

monorail. From the water the coils are drawn through sawdust into a pair of bristle brush rolls, finally being recoiled around a belt-driven coil block. This is known as a continuous drying-out machine and takes thin gage metal down to 0.005 in.

After pickling, metal goes to the inspection benches. For inspecting thin gage material, coils are wound from one arbor to another, passing over a light which permits close observation. Two motor-driven slitters, one for heavy and the other for light-gage metal, are used to cut finished material to the desired widths. There are also a patent leveling machine and a cut-to-length shear with straightening rolls.

A ramp leads from the finishing end of the mill to a shipping floor, which is on a level with the outside railroad platform. There is a rolling lift door between shipping room and platform. Two other rolling lift doors on another side of the room open up on a driveway where motor trucks may be stationed for loading, the floor of the room being on a level with the truck bodies.

Oil is used to fire a forced draft heater with two burners, built by the Gillespie-Dwyer Co., Chicago. The heated air is driven through the plant by a motor-driven blower with pipe connections suspended from the ceiling of the plant. Steam is generated in an oil

furnace located in the basement. The steam is used to heat the hot water vats and to preheat oil used in the annealing furnaces.

Two steel oil storage tanks are located underground beneath the shipping room. Oil is transferred by gravity from tank cars, each storage tank having 10,000 gal. capacity, or sufficient to take the entire contents of an ordinary car.

The mill building, 100 x 265 ft., is of steel frame construction with lantern-type monitor roof. Continuous sash in the side walls and in the monitor insure abundant natural light. Only one side of the building is permanent and that has a brick wall, the other sides being constructed of hollow tile. The plant is on an 8½-acre site, amply large for expansion for many years to come.

Using the Mill's Output

Only brass in coils and sheets is made in the mill and to a large extent it is utilized in the main plant of the Dallas company, a three-story and basement structure, 100 x 213 ft., located at 820 Orleans Street, Chicago. There copper is finished, as received from the mines in ingots, to any width and gage down to a thickness of 0.001 in. Likewise brass, bronze, nickel, silver, zinc and similar metals are rolled to finish in coils and strips.

Much of the rolled product is used in a lock-seam tube department, said to be the largest installation in the United States. Copper, brass and steel are formed into lock-seam tubes in diameters from 3/16 to 3 in., outside. The Orleans Street plant also has a large press department where intricate shapes are fashioned, and an eyelet department equipped with 14 machines for the manufacture of small special parts. Recently the production of lighting fixtures for homes, apartments and hotels has been undertaken.

The rolling and manufacturing activities of the Dallas company are a relatively recent outgrowth of a brass and copper jobbing business incorporated in 1908 under the style of A. C. Dallas & Son. In 1911 the company took larger quarters at 117 North Jefferson Street, Chicago, and began the manufacture of lock-seam tubes in a small way. Later growth dictated removal to 223 North Jefferson Street and in 1916 several pairs of rolls were installed to meet the increasing demand for the thin brass and copper used in automobile manufacture. The old corporation went out of existence in 1918, giving place to the Dallas Brass & Copper Co. Two years later the large Orleans plant was completed and still further expansion of the company's business resulted in the recent construction of the brass mill on West Grand Avenue.



Dr. Richard Moldenke

American Foundrymen's Association Bestows the First Seaman and McFadden Medals



Dr. Robert J. Anderson

ON the recommendation of the board of awards of the American Foundrymen's Association the board of directors has chosen Dr. Richard Moldenke to be the first recipient of the Joseph S. Seaman gold medal, one of the association's four major awards, in recognition of his many contributions to the foundry industry. Dr. Robert J. Anderson was at the same time chosen to receive the first W. H. McFadden gold medal for his contributions to the technical sessions of the A. F. A. and his contributions to the aluminum casting industry.

These medals, which are to be presented at the Syracuse meeting of the foundrymen the week of Oct. 5 to 9, are two of four gold medals authorized for presentation from time to time to outstanding men connected with the foundry industry. The first Penton and Whiting medals were presented at the 1924 Milwaukee meeting to Enrique Touceda and John Howe Hall for their contributions to the malleable and steel castings industries respectively.

These medal awards were made possible by gifts to the association, contributed in 1920, by four charter members and past officers of the association: John A. Penton, W. H. McFadden, J. H. Whiting, and the late Joseph S. Seaman.

Dr. Richard Moldenke

DR. MOLDENKE was born in Watertown, Wis., Nov. 1, 1864. After passing through Columbia grammar school, he entered the School of Mines, Columbia University, graduating as an engineer of mines in 1885. After two years' varied experience in engineering, he returned to the university, on the teaching staff,

and studied for and received the degree of doctor of philosophy.

The acceptance of a position with the McConway & Torley Co., Pittsburgh, was the starting point of his career as a metallurgist. Joining the Pittsburgh Foundrymen's Association in 1897, and the American Foundrymen's Association a few months later in the same year, Dr. Moldenke soon came to know all the prominent foundrymen of those days and many lasting friendships resulted. Close to such men as Thomas D. West, A. E. Outerbridge, Jr., W. J. Keep, E. H. Putnam and W. G. Scott, investigation, testing, committee conferences and the working out of problems in cast iron and foundry practice became a labor of love, and through the combined effort of this group of men came the beginnings of a revolution in foundry practice which made America easily the leader of the industrial world in that branch of productivity.

In 1899, Dr. Moldenke took part in the organization of the Pennsylvania Malleable Co., of Pittsburgh, and acted as superintendent until production was well under way. In the early 90's he was elected secretary of the American Foundrymen's Association, did considerable consulting work and found time for much research in many branches of foundry metallurgy and practice. As chairman of the American Society for Testing Materials committee on cast iron, together with Walter Wood, of Philadelphia, repeated journeys were made in Europe, and the foundations laid for the interchange of information on the testing of cast iron, now so happily extended by the American Foundrymen's Association.

Dr. Moldenke has contributed to foundry literature

probably more than any other man. Besides technical articles and reports, a book on the production of malleable castings and a text book on the "Principles of Iron Founding," as well as a series of booklets on special foundry subjects attest the fertility of his pen. He has received many society honors. He is honorary member of the American Foundrymen's Association, the Institute of British Foundrymen, the Pittsburgh, New England, and the Newark Foundrymen's Associations. Besides having been secretary-treasurer of the American Foundrymen's Association, he was vice-president of the American Society for Testing Materials, and is a member of the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the British Iron and Steel Institute, the American Electrochemical Society, and was the first American member restored to the membership list of the Verein Deutscher Eisenhuettenleute after the war.

Dr. Moldenke is still actively engaged in research work, having a small experimental foundry at his "castle" in Watchung, N. J. He has taken out many patents and his consulting practice is extensive, often taking him abroad on special missions.

Dr. Robert J. Anderson

BORN in Cleveland, July 10, 1892, Dr. Robert J. Anderson obtained his earlier technical training at the Case School of Applied Science, Cleveland, from which he received the degree of B. Sc. (in metallurgy) in 1914 and post-graduate degree of Met. E. in 1917. In 1925, he was granted the degree of D. Sc. from the Massachusetts Institute of Technology, Cambridge.

Upon graduation from the Case School of Applied Science, he accepted a position as instructor in metallurgy at the Missouri School of Mines, Rolla, Mo. The later positions which he held were successively those of metallurgical engineer for the American Rolling Mill Co., Middletown, Ohio; assistant to Dr. Henry M. Howe, Columbia University, New York; chief metallurgist, Cleveland Metal Products Co., Cleveland; research metallurgist, United States bureau of aircraft

production, Washington, Pittsburgh, and Detroit; metallurgical engineer and chief of the non-ferrous metals section of the U. S. Bureau of Mines at Pittsburgh; and lecturer in metallography, Carnegie Institute of Technology. He is now acting as consulting metallurgical engineer and technical expert in the metallurgy of aluminum with headquarters in Cleveland and Pittsburgh.

Dr. Anderson has contributed extensively to the technical magazines and technical associations articles on metallurgical subjects chiefly relating to aluminum and aluminum alloys. Among his activities on behalf of the American Foundrymen's Association, one of his most important achievements was the development of the aluminum-alloys session of the annual meeting.

Dr. Anderson has carried out many investigations on various aspects of aluminum-alloy foundry practice with a view to raising the standards of technical practice. The result of the majority of these investigations has been published in the *Proceedings* of the A. F. A. and in governmental technical papers. Dr. Anderson has also carried out investigations and published his findings on the heat treatment of aluminum-alloy castings and on the radiography applying to such castings, also results of investigations on the metallography, heat treatment and founding of brass, bronze and other copper alloys, together with investigations on the corrosion of metals and alloys.

His recent book, "The Metallurgy of Aluminum and Aluminum-Alloys," in 1925, has received an excellent reception as a standard text and reference book.

His contributions to the meetings of the American Foundrymen's Association have been numerous and in addition he has served on several technical committees being for several years chairman of the committee on non-ferrous papers. He is also a member of the joint committee on molding sand research of the American Foundrymen's Association and the National Research Council. He is a member of other technical organizations, including the American Institute of Mining and Metallurgical Engineers, American Society for Testing Materials and Franklin Institute.

CORROSION BY CITY GAS

Tests on British Wrought Iron Pipe—Need for Specifications

BY C. H. S. TUPHOLME

THE two largest corporations in Great Britain manufacturing gas recently collaborated in tests on the effect of gas on various brands of wrought iron, and these tests have disclosed an astonishing variation in the composition of wrought iron gas barrels, and also the fact that tubing sold as wrought iron is, in many cases, a mixture of iron and steel. The gases used in the tests were:

1. Carbon dioxide plus oxygen.
2. Oxygen.
3. Practically pure carbon dioxide, but containing about 0.2 per cent oxygen.

These gases were allowed to bubble through water so as to insure a state approximating complete saturation without any tendency to form dew. The experiments were allowed to go on for 36 hr., but there was no visible change in the bright surface of any of the various samples of wrought iron tubing, which were supplied by leading British manufacturers. A small jet of steam was then blown into the specimens when rusting rapidly occurred. This shows how essential is the presence of water to the activity of oxygen, though it is really only confirmation of a well known phenomenon.

At the completion of the experiments the amount of corroded iron was determined gravimetrically. Though most of this was found to be hydrated ferric oxide, some was found in solution as ferrous bicarbonate. This is an important point because it has some bearing upon the physical form of the oxide subsequently produced. In the presence of oxygen the dissolved ferrous bicar-

bonate decomposes and precipitates hydrated ferric oxide.

The conclusions of the investigators may be summed up under the following heads:

1. Carbon dioxide is not an essential agent for oxidation, though its presence to say 2.5 per cent in a wet gas containing 1 per cent of oxygen would probably accelerate the rate of oxidation by about 10 per cent, assuming that liquid water is present.

2. Though carbon dioxide does not form an oxide of iron, it does, in the presence of water, slowly remove iron in the form of a solution of ferrous bicarbonate, and this soluble compound in the presence of oxygen forms an oxide which is readily transportable, and would lead to the stoppage of small pipes.

3. Liquid water is an essential agent of corrosion and when present in small quantities its potency in promoting oxidation is more marked than when present in larger volume.

4. There is no evidence in ordinary gas distributing systems of products of corrosion that have any retarding effect upon further corrosion. The presence of ferrocyanides in the liquid might modify this view, due to the formation of a fairly close coating of prussian blue, but not much importance is attached to this.

5. Though the following figures are not put forward as conclusive, the experiments show the relative rates of oxidation of typical specimens to be:

Very pure iron.....	100
Wrought iron	150
Steel	190

Something would depend on the constitution of the electrolyte and the nature of the gases present.

It was found that mixtures of iron and steel corrode more rapidly than these two metals separately. Over 13 per cent of the samples which were supplied as wrought iron were found to be mixtures of iron and steel, and the officials of the gas corporations referred to have emphasized strongly the need for a standard specification for gas tubing.



New Tools at New Haven Exhibition

Equipment of 110 Manufacturers Shown—Technical Discussions on Centerless Grinding and Other Production Processes

"IT pays to replace," a slogan often heard in connection with shop equipment, must have had a pointed meaning to many at the conclusion of the fifth annual New Haven Machine Tool Exhibition, held at Mason Laboratory, Yale University, Sept. 8 to 11. One hundred and ten manufacturers were represented and the machinery, which included all classes, was for the most part in operation under production conditions. By comparing the output obtained, users of obsolete equipment and tooling undoubtedly realized the wastefulness of the older machinery.

This exhibition, held annually, is under the auspices of the New Haven section of the American Society of Mechanical Engineers, Yale University and the New Haven Chamber of Commerce. From a purely local venture started five years ago with only ten exhibitors and an attendance confined largely to the mechanical engineering faculty and students at Yale, it has grown until it is attracting visitors from all over New England and adjoining States, the attendance last year—the highest thus far reached—having been estimated at over 15,000.

Four technical sessions, arranged by the machine shop practice division of the American Society of Mechanical Engineers, were held during the exhibition. Local plants were visited, including that of the New Haven Clock Co., Geometric Tool Co., and the Safety Car Heating & Lighting Co. A round-table dinner discussion of inspection methods, press work, production milling and shop training methods was well attended.

Centerless Grinding Economical

Much interest was shown in centerless grinding, a paper on the "Theory and Practice of Centerless Grinding" by W. J. Peets, engineer in charge of factory methods, Singer Mfg. Co., Elizabethport, N. J., having been particularly well received. Slides of set-ups for a variety of work were exhibited and data from actual practice submitted.

On work for which it is adapted the quantity production of cylindrical ground pieces, the centerless grinding machine outclasses any other for economy, according to Mr. Peets. It consists primarily of two abrasive wheels, the fast running or grinding wheel

and the slow running or regulating wheel, mounted so that their peripheries face each other. One of the wheels has its axis arranged so that it can be swung out of parallel with the axis of the other wheel by varying amounts, as required. Between the two abrasive wheels is a rest which supports the work. According to the relative axial positions of the two abrasive wheels, the centerless grinder may be employed for two distinct classes of cylindrical grinding, straight-in and through grinding.

Among the advantages of centerless grinding over between-centers grinding is that the action (in through-grinding) is continuous. The machine eliminates time wasted in placing work between centers, putting on and removing dogs, advancing wheel to the work, etc. On work of small or medium diameter and length the operator is kept busy simply feeding the machine. Much smaller stock allowance for grinding is necessary than in between-centers grinding, it was stated, and, as a rule, in centerless grinding the work is supported better. The size of work can be held to closer limits on the centerless grinder, with less skill on the operator's part. This is said to be because the wheels are not moved during grinding and the chances of error arising from infeed of slides, stops, etc., are eliminated. Also, in centerless grinding, stock is removed from the diameter instead of from the radius of the work, which is said to reduce by one-half any error due to wheel wear (as compared to between-centers grinding) while the wheel wear is minimized by the comparatively light cut taken, making unnecessary frequent adjustments for holding size of work.

It was pointed out that the simpler type machine, besides requiring a less skilled operator, also effects considerable reduction in upkeep expense, as the only moving parts while operating are the two wheel spindles and the mechanism of turning them. Another advantage cited is that no centering is required.

Disadvantages of Centerless Grinder

The main disadvantage or limitation of the centerless grinder, according to Mr. Peets, is that quantities of work must be fairly large to warrant setting up the machine. Moreover, the type of work is limited to

pieces of one diameter for through-grinding, and of one or two diameters for shoulder work in straight-in grinding. Dressing of the wheels for through grinding, the necessity and form of work guides, and the production of round work by the centerless grinder were also discussed. Production records by the through-grinding method and data on straight-in or form grinding were presented. The paper was illustrated by a large number of slides.

Increase in production at reduced cost together with the precision obtained was pointed to as the outstanding advantage of centerless grinding by W. W. Seabury, Ford Motor Co., Detroit, in a discussion of Mr. Peet's paper. Contrary to the general opinion that the scope of the machine is limited to production of small cylindrical parts ranging from 1/16 to 3 in. in diameter and that it is primarily efficient as a finishing machine and not as fast in machining cast iron and steel parts accurately as the various special turning machines available, his own experience indicates that the range of work handled is very wide. To illustrate his point Mr. Seabury cited actual applications of the centerless machine on work at the Ford plant.

Cylindrical Lapping on Quantity Basis

"Precise Cylindrical Lapping" was the title of a paper presented by Paul M. Mueller, metrologist, Pratt & Whitney Co., Hartford, in which a method of lapping cylindrical work, similar to the Hoke method of lapping flat surfaces, was described. Better cylindrical surfaces, he stated, are produced than by hand lapping, and size control is made so simple that the gage diameters can be kept just under the maximum value of the wear limit. Rough- and finish-lapping operations are done on the same laps and equipment. Work is generally prepared for lapping by grinding. For gage work it is found most economical when the grinding size is 0.0002 to 0.0003 in. above finish size.

The measurement of rolls made in quantity to such precise limits by this method of lapping requires refinements in measuring equipment which the standard measuring machine cannot give. The Pratt & Whitney Co. has developed two new machines, one of which, the millionth comparator, is used as a transfer medium between the product and a master replica. The master replicas, or primary masters, are calibrated on the interferometer, the operation of which was described and illustrated.

In conclusion, Mr. Mueller said that any round piece can be lapped in quantity to a highly finished and accurate surface with speed. Where conditions demand, extreme precision can be maintained with practical equipment and controls. The apparatus for lapping is not particularly expensive, nor is it difficult to maintain and operate. From the gage user's viewpoint, the chief value of the method is its inherent ability to cheapen over-all gage cost. Wear metal or "plus metal" on a gage is the greatest factor in determining gage economy.

Written discussion of Mr. Mueller's paper submitted by C. T. Appleton, sales manager Reed-Prentice Co., Worcester, Mass., described cylindrical lapping on a production basis by means of the Mirra cylindrical lapping machine.

Data on High-Speed Cutting of Brass

Data on the high-speed cutting of brass and other soft metals in standard machine tools were presented in a paper by Luther D. Burlingame, industrial superintendent Brown & Sharpe Mfg. Co., Providence. It was pointed out that there is as yet no standardized practice in operations on soft metals, especially in making use of general purpose machine tools and adapting them to high speed work of this character.

Essential factors of a machine used on soft metals are that it shall be possible to run the spindle at high speed and to secure proportionately increased feeds. Tools must be so rigidly supported that they will stand the higher feeds and speeds and still produce smooth and accurate work without the necessity of too frequent grinding. The use of attachments permits performing many operations which otherwise would necessitate a second handling of the work in another ma-

chine, the author stated. Attachment work includes milling, cross drilling and gear cutting operations.

As to cutting tools, it was said that, generally speaking, the same styles are used as when operating on steel, but with less clearance. Rolling threads on soft metals is common practice and sometimes can be used to marked advantage. It is possible also to use skiving methods, especially when operating on aluminum. There is a marked difference in practice as between the use of carbon and high-speed steel tools. Some assert that the carbon steel tools can be used successfully, thus saving the expense of the high-speed steel.

While much work in cutting soft metals is done without the use of coolant, and the tools stand up well, the general practice is to use coolant, usually lard oil, Soda water is regarded as preferable by many, but the difficulty is its penetration to the bearings and between the slides of the machine, resulting in hard action and breakage. Some are using special soda water solutions, contending that their mixtures are such as to avoid this difficulty, thereby giving them the benefit of low cost and a more satisfactory coolant. A coolant said to give good results in machining aluminum is made up of equal parts of kerosene and lard oil.

When Brass Costs Less Than Steel

In discussing the kind of metal to be used for specific purposes it was pointed out that brass is often cheaper. Although steel costs only about one-third as much as brass, the much greater speed at which the latter may be machined, often permits of such an increase in production that the initial cost of the stock is not only offset, but a material reduction in cost is effected. Salvage also was cited as being so much greater for brass than for steel that frequently the labor cost of making brass parts can be paid for out of the sale of the scrap. More than 21 examples of high-speed brass screw machine work were shown by Mr. Burlingame, and most of these, he said, were made not only at a much lower direct cost than if made of steel, but also at a material saving in floor space and overhead charges because of the fewer machines and shorter operating time required. A piece was shown that was produced more than six times as fast in brass as in steel, and at less than half the cost. The labor cost may be slightly higher for brass than for steel, due to the extra work in supplying a larger number of rods of stock and in caring for the chips, but this should be balanced, it was said, by the longer life of the tools when cutting brass, as they require less frequent grinding and setting.

The quality of brass stock used was stressed as a factor influencing the cost of making brass parts.

Commercial Airplanes Made of Metal

The development of metal airplanes for commercial use, beginning with the preliminary experimental work which led up to the present design of the all-metal plane in use on the Ford air lines out of Detroit and other cities, was outlined in a paper on "All Metal Airplanes," by William B. Stout, of the Stout Metal Airplane Division, Ford Motor Co., Dearborn, Mich. This paper, read by G. H. Hoppin of Mr. Stout's company, was illustrated by slides and moving pictures.

Greater interest has been shown in air transportation in the past six months than at any time since the war, according to L. S. Horner, vice president Acme Wire Co., New Haven, and chief of staff, Bureau of Aircraft Production during the war, who made a brief address preceding the reading of Mr. Stout's paper. The interest of the Ford company in airplanes was, he thought, largely responsible for this.

At the same session O. B. Iles, president of the International Machine Tool Co., Indianapolis, and president of the National Machine Tool Builders' Association, made an address on the "Future of the Machine Industry," an abstract of which appeared in THE IRON AGE of Sept. 10. "The Foreign Trade Outlook in the Machine Tool Field," an address by W. H. Rastall, chief of the industrial machinery division, Bureau of Foreign and Domestic Commerce, Department of Com-

Exhibition Is Incorporated

THE New Haven Machine Tool Exhibition has been incorporated under the laws of Connecticut, according to an announcement, dated Sept. 12, by the Mason Laboratory of Mechanical Engineering, Yale University. This action, which follows five years of rapid growth, was taken to insure the continuity of the policies and efforts which have made the exhibition such a success. The corporation will have no capital stock and no part of the property or income can be used for the benefit of private individuals.

The corporation membership numbers 15, of whom nine will be appointed by the chairman of the New Haven section of the American Society of Mechanical Engineers from its members, three by the president of the New Haven Chamber of Commerce from that body and three by the Department of Mechanical Engineering, Yale University, from that department. At least two-thirds of the surplus from the exhibition each year will be set aside as a reserve fund and will not be used to defray ordinary exhibition expenses except with approval of two-thirds of the entire board of management. The next exhibition, according to tentative plans, will be held at Mason Laboratory, Sept. 7 to 10, 1926.

merce, Washington, abstracted in this issue, was given at this session.

At a session devoted to shop training methods, J. P. Kottcamp of the Johns-Manville Co., Inc., Manville,

N. J., spoke on "Technical Training for Industry." The development of schools that would give a two-year intensive engineering course under industrial conditions was advocated by Mr. Kottcamp.

Variety of New Equipment Shown

WITH 59 exhibitors representing 110 manufacturers, the showing of machine tools and other equipment was impressive. In floor space, 2000 sq. ft. more than last year was required. General features of several of the new and improved machines and other equipment are outlined in what follows, while further description of some of the new designs will be given in forthcoming issues.

Among the machines at the booth of Henry Prentiss & Co., Inc., New York, which showed the machines of more than ten manufacturers, were three new tools of the Cincinnati-Bickford Tool Co., Cincinnati, among them an improved 4-ft. radial drill with variable-speed motor drive, controller mounted on the head, push button control and pneumatic column binder. The machine has a heavier frame than formerly. Another Cincinnati-Bickford exhibit was a 20-in. upright, sliding-head type drill with direct constant speed motor drive inclosed in the base. This machine is intended for intensive production, and the maximum speed is 1600 r.p.m. With a $\frac{1}{2}$ -in. drill the penetration is 16 in. per min. in cast iron. A new 21-in. direct drive machine with tapping attachment and using a 4 to 1 variable speed motor was also in operation.

At the same booth the Avey Drilling Machine Co., Cincinnati, exhibited a new No. 1 $\frac{1}{2}$ single-spindle "Aveymatic" with a built-in four-speed a. c. motor mounted vertically at the rear, the motor pulley being belted to a two-step spindle pulley. The motor is adjustable horizontally by hand wheel at the front of the machine, serving to tighten the belt when necessary. Eight speeds, up to 4500 r.p.m., are obtainable.

New 24-In. Shaper

A 24-in. "Invincible" shaper, recently added to the line of Gould & Eberhardt, Newark, N. J., was shown. This, in addition to being a new size, includes centralized oiling, direct motor drive and other refinements.

The Cincinnati Milling Machine Co., Cincinnati, had its new No. 3 pyramid-column type high power plain miller under power, and its centerless grinder in operation on a variety of work. A 14-in. selective geared-head tool room lathe with motor inclosed in the leg was shown by the Lodge & Shipley Co., Cincinnati, and a four-spindle chucking machine, tooled for brass work, by the Goss & DeLeeuw Machine Co., New Britain, Conn. A new No. 41 high-speed press with direct-connected motor drive and an automatic armature disk notching attachment, operating at 600 strokes per min., was among the machines of the V & O Press Co., Hudson, N. Y. Other machines at the Henry Prentiss company booth included a 10-ton vertical hydraulic broaching and forcing press of the Oilgear Co., Milwaukee; the "Milband" high-speed metal cutting machine of the Henry G. Thompson & Son Co., New Haven; the No. 10 vertical surface grinding machine of the Blanchard Machine Co., Cambridge, Mass., and the "Ter-O-Matic" automatic bore grinder of the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. The latter machine was shown in roughing and finishing work, demonstrating the automatic sizing device, automatic wheel truing device and other features.

Among the new equipment in the space of Purinton & Smith, Hartford, was a No. 104 motor-driven internal grinder of the Rivett Lathe & Grinder Corporation, Boston. A visible dial gage, special diamond truing device, special chucking equipment, automatic headstock and water control and Fork-cup system of lubrication are among the new features. A No. 608 lathe mounted on a cabinet and equipped with gear box and traverse relieving attachment was also on view.

A drill head with built-in motor was a new unit shown by the Kingsbury Mfg. Co., Keene, N. H., which exhibited several interesting drilling machines employing the company's drill head. The Hart & Hegeman Mfg. Co., Hartford, exhibited a high-speed automatic tapper with dial feed. A "super" drill chuck the sleeve and key of which have spiral teeth was a new item shown by the Jacobs Mfg. Co., Hartford. The Rhodes Mfg. Co., Hartford, Conn., had a $3\frac{1}{4}$ -in. vertical slotter equipped with circular dividing table, and tilting knee, the latter being a new feature. A 7-in. shaper was also in operation.

Broaching Machine With Improved Features

The J. N. Lapointe Co., New London, Conn., showed its No. 4-W variable-speed broaching machine which includes improved features. All piping excepting the high pressure and low pressure pipes from the cylinder to the pump has been eliminated. Automatic high-speed return of the broach at the rate of 60 ft. per min. is provided, regardless of the cutting speed. The machine was demonstrated broaching ten splines in pieces of cold rolled steel 2 in. in diameter, $2\frac{1}{4}$ in. long. The floor to floor time was 15 sec. per piece, 300 lb. gage pressure.

A 16-in. helical geared tool room lathe of the Monarch Machine Tool Co., Sidney, Ohio, equipped with lead screw reverse and cam-operated frictions was among other exhibits in the space of Purinton & Smith. A Sapp No. BW 8-in. overhang quick change sensitive drill was shown by the Foote-Burt Co., Cleveland, and a No. 33 vertical spindle surface grinder by the Abrasive Machine Tool Co., East Providence.

A feature of the exhibits in the space of Manning, Maxwell & Moore Co., Inc., New York, was the $\frac{1}{4}$ -in. automatic bent tap nut tapper, a new size being brought out by the National Machinery Co., Tiffin, Ohio. It is for both square and hexagon brass and steel nuts, taking taps from No. 2-56 to No. 6-32. The machine is motor driven and has hopper feed. The production with a No. 4-36 tap is 200 per min. Other machines in this space included a 20-in. heavy-duty production drill of the W. F. & J. Barnes Co., Rockford, Ill.; a No. 1 motor-driven universal cutter and tool grinder, a No. 75 motor in the base, cabinet type surface grinder and a new Yankee drill grinder of the Wilmarth & Morman Co., Grand Rapids. A 22-in. helical geared-head lathe of the Monarch Machine Tool Co., Sidney, Ohio, was in operation, as were also two pipe machines of the Williams Tool Corporation, Erie, Pa., and a universal woodworker of the Crescent Machine Co., Leetonia, Ohio.

Of several machines shown by Botwinik Brothers, New Haven, was a shaper of the John Steptoe Co., Cincinnati; grinders of the Hisey-Wolf Machine Co., Cincinnati; the Connecticut universal grinder of the Middlesex Machine Co., Middletown, Conn., and inclinable power presses of the Rockford Iron Works, Rockford, Ill.

The exhibit of the Pratt & Whitney Co., Hartford, was large and included its late models. A 30-in. vertical miller and profiler was under power, and a 13-in. geared head Model B lathe was in operation on a variety of precision and production work. A new 6-in. Model B shaper was exhibited, as well as a single-head plain centering machine intended either for short runs of work or single pieces of any length. A rotary table for accurate indexing for use with the company's jig borer and other machines was also shown and there was a large display of small tools and gages. The plug part of a cast-iron A.P.I. oil well casing gage, 24-in. diameter, attracted attention.

Screw Machines in Operation

In automatic screw machines the Brown & Sharpe Mfg. Co., Providence, demonstrated its No. 80 equipped with high-speed spindle and slotting, threading and cutting off

small brass screws at the rate of 40 per min. A No. 6 machine was also set up for brass work, and numerous small tools and gages were shown. Aron Stroud, New York, demonstrated the $\frac{1}{8}$ -in. "Index O" automatic screw machine of the Index Works, Hahn & Kolb, Stuttgart, Germany, which has been described in these columns. Brass screws from stock $\frac{1}{8}$ in. in diameter were being made at the rate of 42 per min., the operations being forming, threading, cutting-off and slotting. A small combination oil separator and filter of new design was also a feature.

The National Acme Co., Cleveland, had a $\frac{1}{4}$ -in. Gridley multiple spindle automatic in operation on bibb stems and a $\frac{1}{8}$ -in. five-spindle Acme automatic screw machine. "Namco" hardened and ground dieheads were also on display. A Model M four-spindle automatic was shown in operation by the Cleveland Automatic Machine Co., Cleveland.

Three machines were under power in the space of the New Britain Machine Co., New Britain, Conn., one of them being a 12A chucking machine, recently announced, which is of the tool rotating type, and was drilling and counter-boring brass stuffing box nuts at the rate of 1100 pieces an hour. The Warner & Swasey Co., Cleveland, demonstrated its No. 1-A universal hollow hexagon turret lathe and also the Roto pneumatic grinder recently described.

Improvements Made in Grinders

In grinders, the Norton Co., Worcester, exhibited a new type B machine which has more automatic features than its previous wide wheel machines. It is also larger, having a maximum swing of 12 in., which provides room for steady rests when required. Work up to 18 in. long may be held on centers, and single cuts up to 9 in. long may be made. The rotation of work is stopped, the coolant flow shut off and the wheel feed reversed automatically at the end of each cut. The weight of the machine with motors is 9300 lb. The company's type S 24-in. floor grinder was also in operation and samples of wheels, tile and refractories were exhibited.

The new No. 3 semi-automatic small hole grinder of the Bryant Chucking Grinder Co., Springfield, Vt., was another unit shown for the first time. It is for work up to 1 in. in diameter and grinds to 0.0001 in. It is equipped with sizing attachments and air control, most of the manual operations being done by compressed air. Also in operation were a No. 6 Hi-speed hole grinder with sizing attachment, and the company's No. 15-A two-spindle hole and face grinder, now made heavier than previously.

The Van Norman Machine Co., Springfield, Mass., introduced a new No. 96 turning and grinding machine, which is for all sizes of pistons, turning and grinding them at the same set up without removing from centers. Other work up to 10 in. in diameter and 15 in. long may be similarly machined.

Among several machines shown by the Bridgeport Safety Emery Wheel Co., Bridgeport, was a No. 174 swing frame grinder, which operates without belts and without overhead suspension. A 16 x 2 1/2 x 1 1/2 in. wheel operating at 1200 r.p.m. is employed. Chain driven buffing lathes and sectional wheel chucks were other items to be seen.

Faster and more convenient operation are features of a new drill pointing machine exhibited for the first time by the Oliver Instrument Co., Adrian, Mich. In this machine cross motion of the wheel is obtained by an eccentric quill rather than by a rocker arm. Drills are held by the point instead of by the shank, which permits of handling bent drills. Among other improvements is forced feed lubrication for bearings and gears. The grinding speed has been increased about 50 per cent by rotating the drills continuously instead of intermittently.

Drilling Machines for More Rapid Work

In drilling machines a new style single-spindle class R Viktor drill of the Henry & Wright Mfg. Co., Hartford, was in operation. By means of a variable-speed arrangement, eight speeds from 422 to 1750 r.p.m. are obtainable, changes being made while the machine is operating. With change gears, speeds up to 2400 r.p.m. may be obtained. Conveniently operated belt shifter and bath gear unit are features. The machine is equipped with the "three-in-one" feed, being operated at full automatic, semi-automatic or hand feed. Control is from the front and compact construction is a feature. A two-spindle Viktor single purpose drill was also on exhibit, as well as the company's dieing machine, which was set up for production at the rate of 265 pieces per min.

Another machine shown for the first time was the No. 43 three-spindle production drill of the Taylor & Fenn Co., Hartford, equipped with power feed, hand feed, and tapping head, respectively. Spindle speeds from 575 to 2300 may be obtained by changing the spindle and rear shaft pulleys. The power feed is variable, automatically increasing when the spindle speed is reduced. The company's No. 0 and No. 12 uniform flow spring presses were also demonstrated.

The Leland-Gifford Co., Worcester, had several drilling machines in operation, including a new unit designated as the No. 3 Morse taper machine. It is equipped with standard power feed, semi-automatic, which is driven directly by gears keyed to the spindle. The back gear unit is operated by single lever. The machine is provided with quick feed change mechanism and is ball bearing throughout. Six speeds are obtainable. The same machine equipped with direct connected a. c. motor drive, with speeds 150 to 1800 r.p.m., with back gear unit, was also shown.

A center of interest was the No. 1 1/2 Sykes gear generator exhibited by the Farrel Foundry & Machine Co., Buffalo. The machine is capable of cutting double helical gears with continuous teeth and sharp apices with bearing surfaces over their entire length, a process said to have been impossible heretofore. Straight tooth spur gears, single helical gears and sprockets may also be cut. The capacity is from 0 to 18 in. in diameter by 8-in. face, pitches from 20 dp. to 3 dp. The machine produces involute curves by employing cutters which are involute gears made to a high degree of accuracy. The cutters are generated with precision by a grinding process, applied after hardening. Accuracy of tooth form and rapid production are features claimed. A Sykes universal shaft coupling, shown for the first time, was also a feature of this exhibit. It is compact and is said to take care of every kind of misalignment, angular or offset or a combination of these. There is no problem of lubrication connected with it. Its limit of angularity is 5 per cent and the limit of offset 4 deg. of the maximum bore.

Considerable interest was also shown in a type BL tool

room milling machine, a new product of the Keller Mechanical Engineering Corporation, Brooklyn, N. Y. The machine is intended for use in making blanking and trimming dies, cams, gages, jigs, metal patterns, for plain milling operations and dividing head work. It is claimed to be adapted for a wide variety of machining impractical on standard machine tools. A full description will be given in a forthcoming issue.

The Noble & Westbrook Mfg. Co., Hartford, demonstrated a new marking machine arranged for work up to 36 in. in length. A rapid production machine for marking pieces of tubing up to 3 in. in diameter, such as ferrules, lamp sockets, etc., the output being up to 60,000 pieces a day, was also shown, as well as the company's automatic serial numbering machine for use on round and flat surfaces.

In addition to noiseless riveting machines and hammer type riveters, the Grant Mfg. & Machine Co., Bridgeport, had in operation a new double end automatic for simultaneously threading both ends of studs and rods. The capacity is for work up to $\frac{3}{4}$ in. in diameter and 10 in. long. The machine is equipped with magazine feed, and $\frac{3}{8}$ -in. rods can be threaded on both ends to a length of $\frac{1}{2}$ in. at the rate of 25 per min.

Heavy Machinery Exhibited

A new size of "N" type gap frame power press, the 3N, with a slide pressure near the bottom of the stroke of 25 tons, was shown by the E. W. Bliss Co., Brooklyn, N. Y. The machine has an overhung slide and end wheel type drive. Unusual rigidity is a feature and special attention has been given to lubrication. Other machines exhibited were the No. 8 bench power press and the No. 20 inclinable.

A No. 7S, 4 1/2-ton inclinable power press with new style cap connection was under power at the booth of the Standard Machinery Co., Auburn, R. I. The motor is mounted so that its weight acts as a belt tightener. A bench press of 2 1/2-ton capacity was shown, and also the company's 100-lb. drop hammer. A rotary swaging machine with cabinet base and motor inclosed in the frame was in operation.

The Torrington Co., Torrington, Conn., exhibited swaging machines. Included was the No. 4 Dayton-Torrington four die machine, in which a reduction from $\frac{3}{4}$ in. to $\frac{1}{8}$ in. is made at one pass, two swaging operations and the possibility of one or two annealings being eliminated.

Metal sawing machines were shown by E. C. Atkins & Co., Indianapolis, and by the Racine Tool & Machine Co., Racine, Wis.

The Buffalo Forge Co., Buffalo, had its No. 1/2 universal iron worker in operation, cutting and punching plates, rounds and other sections. Drill presses, forge blowers and a forge of pressed steel with one-piece hearth were also shown.

An automatic pinch pointing machine, pointing up blanks for wood screws that were used in demonstrating its No. 10 incline screw thread rolling machine was a feature of the exhibit of the Waterbury Farrel Foundry & Machine Co., Waterbury, Conn. An eyelet machine was also under power, producing work of two diameters at the rate of 108 pieces per min., this work being end trimmed at the rate of 60 per min. on a semi-automatic arbor lathe.

New Optical Devices for Tool Room and Shop Use

Various tool room and shop testing devices being placed on the market were among the items making up the interesting exhibit of the Bausch & Lomb Optical Co., Rochester, N. Y. A toolmaker's microscope for inspecting and measuring forming tools, dies, gages, screw threads and other small parts was shown, as well as two models of a thread profile gage for use in setting thread cutting tools. By means of this device the tool can be set and the accuracy checked before the thread is cut. Other new items were an optical indexing device for B. & S. dividing heads and an optical leveling protractor, which is said to be much more accurate than the usual precision protractor. Two types of a centering level for use in locating milling and other cutters over cylindrical or round work so that the tool is centered to within 0.001 in. with respect to the axis of the work was shown and also calipers with direct optical reading. The company's contour measuring projector, its IL metallographic outfit and several microscopes were demonstrated.

Die heads were shown by the Eastern Machine Screw Corporation, New Haven. A threading machine was in operation and also a chaser grinder with motor mounted under the bench, eliminating the use of belts and countershaft. The Geometric Tool Co., New Haven, had a large display of dieheads, tapping devices and other tools. Serrated tooth milling cutters were featured at the booth of the O. K. Tool Co., Shelton, Conn., which also displayed lathe, shaper and other tools, tool bits and tool holders.

Torches, regulators and other welding and cutting equipment were exhibited by the Oxweld Acetylene Co., Long Island City, N. Y., and the Air Reduction Sales Co., New York. The latter had in operation its Radiograph cutting $\frac{1}{2}$ -in. plate and its Camograph cutting irregular shapes.

Attractive displays of motors, starters and other equipment were made by the Westinghouse Electric & Mfg. Co. and the General Electric Co.

Large Exhibits of Ball and Roller Bearings

More than seven companies exhibited ball, roller or other types of bearings and transmission appliances, these displays making an impressive showing. Among the companies represented were the New Departure Mfg. Co., Bristol, Conn.; S. K. F. Industries, New York; Timken Roller Bearing Co., Canton, Ohio; Norma-Hoffman Bearing Corporation, Stamford, Conn.; Fafnir Bearing Co., New Britain, Conn.; the Strom Ball Bearing Mfg. Co., Chicago, and the Standard Steel & Bearings, Inc., Plainville, Conn. In addition to gears, reduction units and other transmission equipment of the Boston Gear Works Sales Co., shown at the booth of C. S. Mersick & Co., New Haven, "Bearium" metal was exhibited by Bearium Bearings, Inc., Buffalo. Five grades of this material for a variety of applications were shown. Safety set screws and belt fasteners were among the material in the space of the Bristol Co., Waterbury, Conn.

The Crucible Steel Co. of America, Pittsburgh, had an exhibit of various steels.

In heat treating material, the Bellis Heat Treating Co., Bramford, Conn., demonstrated the Lavite process in the hardening and annealing of high-speed and carbon steels. Gas-fired hardening and other furnaces were among the equipment shown by the Industrial Gas Equipment Co., and the New Haven Gas Light Co., New Haven.

Paid Vacations for Workers

Plan Successfully Applied by Norton Co. Since 1919

Affects All Hourly and Piece Work

Employees

BY JOHN NELSON

VACATIONS with pay for hourly wage and piece work employees form an important part of the personnel policy of the Norton Co., Worcester, Mass., manufacturer of abrasive wheels and grinding machines. Carefully studied by the company's service committee since its inception in 1919, the plan has now had what is considered a thorough test, and is regarded as fully justified in terms of results, a heavy cost notwithstanding. This conclusion is the more impressive because the enterprise was planned and has been conducted not essentially as a philanthropic undertaking, but one in which dollars and cents count as a principal aim. The effect on the company's financial status has been considered fully as important as the interests of the hundreds of workers who profit annually in better health, greater happiness and increased earning power. The management from the beginning has made plain that motive.

Plan Applied to 2100 Employees

This year the Norton Co. has about 2100 persons on its shop payroll, and of these 1900 are paid by the hour or piece and 200 by salary. More than 1200 are profiting by the vacation plan, by virtue of their length of service, and are considered to have earned a minimum of one week's vacation annually with full pay. Nearly 50 of them are given

two weeks with pay because they have been 25 years or longer on the payroll, and 150 others because they are paid salaries. All salaried employees apart from the shop payroll receive, as they always have, two weeks vacation with pay.

At the inception of the plan the theory was advanced that to break the year by a period of rest and recreation would prove beneficial to both body and mind; that a vacation would be a matter of pleasurable anticipation as well as realization, unmarred by worry as to where the money was to come from during days of idleness; and likewise, that it would eliminate at least a part of the sense of drudgery that may attach to routine. Moreover, it was expected that the vacation would be an influence in stabilizing employment by reducing turnover, in attracting high-class men to the company's employment, and in adding to an already high morale. No idea of a "concealed bonus" was entertained; the company has been frank in its position.

Benefits Both Company and Men

The reaction in the works has been wholly favorable. The men are appreciative, perhaps a little more so because of the envy of neighbors who are not accorded the same privilege in their employment. No false impression has been created that this is a form of that kind of paternalism which the average American workman dislikes. The Norton men understand fully that the plan operates to the mutual benefit of the company and themselves. They realize that returning to the plant refreshed, they are able to do more and better work. Moreover, it is recognized that the period of rest—with pay—is intended to foster

greater continuity of employment during the remainder of the year by largely removing the incentive for taking an occasional day off.

The company's system as it operates this season is briefly as follows: Every employee working by the hour or by the piece who has been on the company's payroll three years or more, no matter whether or not his service has been continuous, is automatically entitled to one week's vacation with pay. A shop foreman gets two weeks with pay, an assistant foreman one week, or, if he has five years of service back of him, two weeks.

There are several minor restrictions. The employee must have been on the payroll prior to June 1, if he be one of those with an interrupted record of service. A person who has been discharged, even if the discharge be on the eve of an expected vacation, forfeits his right. A man who left the plant to enter army or navy in the World War may count his war service as a part of the required three years.

How Vacation Pay Is Calculated

The amount of vacation pay is liberally calculated. In no case does an employee receive less than his hourly wage multiplied by the average operations of his department during the four weeks preceding the vacation. If he was absent from work—no matter what the reason—and his

average earnings were small, it makes no difference in his vacation pay envelope. The operation of his department is what counts. If, for instance, the department operated an average of 50 hr. a week and his wage was 60c. an hour, he will receive \$30. On the other hand, his actual earnings in the four weeks are taken as the basis for vacation pay, if they exceed the total based on the department's operations. All calculations are by the cost department.

Vacation money is paid in advance, but the employee does not get his pay for the last week of work, for that would normally come to him on payday of the week in which he is away. It awaits him upon his return—a fortunate provision in many cases.

There is no fixed vacation time for all employees. On the contrary, the plant runs along as usual, with no vacation shut-down. Therefore those ineligible to the benefits of the plan because of insufficient service, may continue at their employment without a break in earnings. The vacations are well distributed; each foreman arranges a schedule for his department so it may not be unduly shorthanded at any time. In doing so, he gives due consideration to the preference of each worker. There has been no friction in this respect.

Most of the vacations come between June 1 and Sept. 1, a period naturally preferred by the company, because usually it is not the busiest time of year. However, no hard and fast rule is made to restrict vacations to the summer months. For example, some men, fond of fishing, are given a week in the trout season of early spring, while others take their vacations in the hunting season of late autumn. But no one is permitted to take this year's vacation late in the fall

OUT of 2100 employees, 1200 are entitled to vacations, under the Norton plan.

A prerequisite to eligibility is three years of service—not necessarily continuous.

The plan is not regarded as paternalistic but, in the belief of the Norton Company, is based on the soundest business considerations.

Success of the program is measured by benefits to the company in smaller labor turnover, reduced absenteeism, stimulation of effort and improved morale, although the incidental advantages to employees in better health, renewed interest in their tasks and increased earning power are not overlooked.

Vacations, though largely in the summer season, are distributed so as to cause a minimum of interference with plant operations.

and next year's very early in the spring. They must be more than six months apart. Otherwise the purpose of the plan in breaking the year's labor with a rest period would be frustrated.

No Exceptions to Vacation Rule

Early in the experience of the plan the question was raised whether a worker who preferred the money to a rest should have the option between them—whether he could take his pay for vacation week and then work the week, thus receiving a double wage for the period. In the beginning the matter was left open, decision in each case resting with the service committee. Instances arose of employees who needed additional money to meet the expense of sickness or other unusual demands, but finally, after consultation with the company's medical department, an inflexible rule was established that every employee must take a vacation if he is to receive any benefit from the system. The purpose of the plan, of course, would not be carried out if exceptions were made, for there would be no rest for such workers. For those employees in financial distress relief may be rendered—as at other times of the year—but such action, if taken, has no connection with the vacation plan.

History of Vacation Program

The evolution of the Norton system should interest those considering a similar plan for their own establishments. Curiously enough, after some intermediate

changes, the plan is substantially what it was in the beginning. In 1919, which was the first year, the pay was calculated as at present, and the rule of three years of service prevailed. The essential difference between the original and present plan is that during the first two years, employees of 10 years' service received two weeks with pay and men with three years of interrupted service to their credit were required to have been back on the payroll at least six months. The first basis of vacation pay was the average operation of a given department for the three preceding weeks. This was changed to four weeks.

In 1922 vacations were on a changed basis. The required previous service with the company was placed at five years, and none, regardless of length of employment, received more than one week's vacation. The next year the three-year rule was readopted, and in 1924 two weeks' vacation was allowed workers with more than 25 years' service.

Vacations with pay for men and women who work by the hour or piece are receiving increasing attention. The practice has long been applied to office employees, chiefly because they are salaried and their absence imposes very little, if any, additional cost, but until recent years vacations with pay in the shop or factory were practically unheard of. Now the system is not uncommon, and widespread interest in it is evidenced by numerous inquiries received by companies which are giving it a test, among them the Norton Company.

Floating Steel Roofs for Oil Tanks

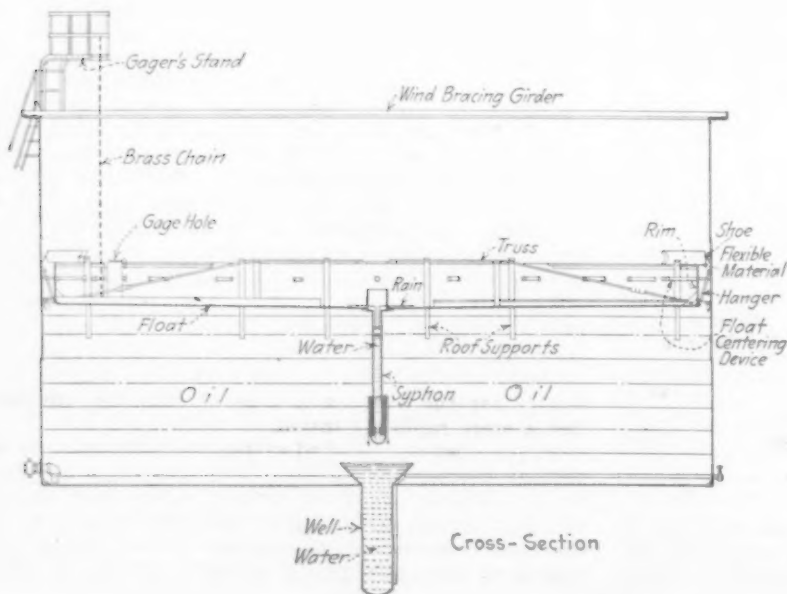
In the illustrations are shown a cross section of a large tank for oil, with a floating roof, and, in the detail, the method of maintaining a seal between the floating roof and the sides of the tank. This construction, known as the Wiggins roof, is being applied by the Chicago Bridge & Iron Works, Old Colony Building, Chicago, to 28 oil tanks for the Vacuum Oil Co. for bulk storage stations in Australia and New Zealand, for storing gasoline and naphtha. Five 30-ft. tanks for the same company are being similarly roofed, at the refinery at Paulsboro, N. J.

Lying on the liquid like a blanket, the float consists of a steel disk $\frac{3}{16}$ in. thick and having a diameter about 16 in. less than that of the tank, with a vertical rim of the same weight plate and about 22 in. high, making it in effect a saucer. Its main purposes are two: to reduce evaporation of oil and to reduce the fire hazard.

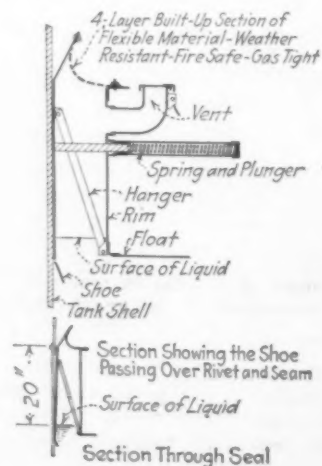
Between the float and the tank is a seal consisting

of a ring-shaped shoe against the walls of the tank, attachment of flexible material between that shoe and the float, hangers holding the shoe in definite relationship to the float, and spring-actuated centering devices holding the float in proper relation to the sides of the tank. The flexible material is both gas tight and fire-proof. The shoe is beveled top and bottom, so that it may ride over the rivets and joints of circumferential seams in the shell. This shoe gives close contact with the shell for a vertical distance of about 20 in.

Fire tests of this roof construction were described briefly on page 1197 of THE IRON AGE, Nov. 1, 1923. Gasoline was ignited in various positions, both on the surface of the float and in contact with the flexible material. Some of it was put into the vent hole and ignited. In all cases this gasoline burned itself out without carrying fire to the contents of the tank. Evaporation is prevented by excluding the air between the oil and the float. It is estimated that this results in a reduction of the loss from this source by about 85 per cent.



At Left Is a Section of the Tank with Floating Steel Roof. Below are details of the bearing of roof edge against tank wall



Export Outlook in Machine Tools

Growing Movement Under Way—First Half of
1925 Exceeds 1924 by 50 Per Cent—
Europe Takes Half

BY WALTER H. RASTALL*

INFORMATION is now available that makes it possible to derive a reasonably clear idea as to the future prospects of American tool exports, a thing which has not been possible for about ten years. That we may have a clear understanding of the situation, it is desirable that we review hastily the experience in this trade since about 1910. American machine tools enjoy a world-wide reputation and are recognized as superior to the products of all other countries. Even Germany and Great Britain, our closet competitors in this business, are also our best customers, a remarkable testimonial to the superiority of the American product.

Europe the Big Market Before the War

In pre-war years this machine tool export trade was important and was expanding rapidly. Although Canada, Japan, Brazil, Argentina and Mexico took important quantities of these machine tools, by far the larger proportion of these shipments went to Europe—some 75 to 80 per cent of the total. The volume rose steadily from about \$3,600,000 in 1909 to more than \$16,000,000 in 1913, giving an average for the five pre-war years of a little less than \$10,000,000 a year. Of this Germany absorbed \$2,300,000; England, \$2,000,000; France, \$1,000,000; Canada, \$1,000,000, and other countries smaller totals.

With the outbreak of the war, there was a sharp increase in the European demand for equipment of this kind and by 1917 the total had expanded to about \$85,000,000, over eight times the pre-war average. And this export demand was in addition to a heavy domestic demand. Those were active years but, when the United States entered the war, certain embargos were imposed, which had the effect of decreasing the export volume until, in 1918, it was only slightly over \$50,000,000.

In 1919, following the Armistice, this total increased to about \$58,000,000 and then, with the collapse of the post-Armistice boom, exports fell off rapidly until in 1922 the total approximated \$13,000,000. Of this Europe absorbed only 32 per cent and Asia, which in pre-war years had taken usually less than 2 per cent, was now taking 38 per cent of the total.

Asia Takes Large Amounts of Machinery

This demand from Asia for metal-working machinery represents a most interesting development, because practically every Asiatic country is ambitious to become industrialized. In traveling in these countries, one gathers the impression that their people realize that the high standard of living of the United States is made possible by the industries established here and by the machinery employed in those industries, which replaces the employment of labor in so startling a fashion. Too many of these people believe that the United States represents a country of fabulous wealth, whose people live in unbelievable luxury and that, through the employment of machinery, we have reached human equality where the servant is like the master and the master is like the servant.

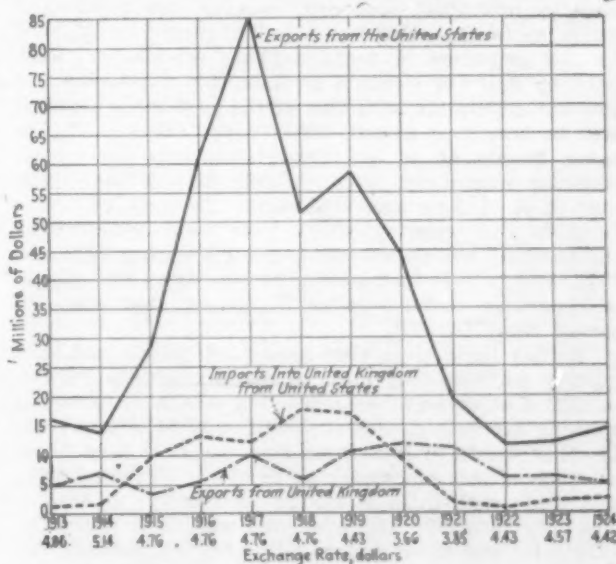
Conditions resulting from the war released a large amount of capital in many of these countries and, as a consequence, a great industrial boom was felt throughout Asia. India, as an example, absorbed far more factory machinery in the few years following the

Armistice than in her entire previous history. China showed somewhat similar results, and Japan has long been distinguished for the employment of modern methods, the best types of machinery and a program of industrialization.

However, like other booms, it appears that these new industries have not always been successful and there is now in progress in many Asiatic countries what might be called a period of assimilation. One must not infer from these statements that industry there is really depressed, because even now the machinery imports of these various Asiatic markets are greatly in excess of the volume taken in pre-war years.

Surplus Stocks After the Armistice

The markets of Europe, following the Armistice, were greatly overstocked with metal-working machinery. Wherever machine tools could be produced in



Twelve Years of Exports of Metal-Working Machinery from the United States and from Great Britain and British Imports of American Metal-Working Machines

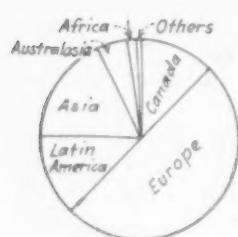
Europe, factory capacity had been greatly expanded, while the demand had readily absorbed all equipment that could be produced. Finally, practically every government found it necessary to throw on the market large stocks of new and second-hand equipment of this general character. As a result, since 1918 it has been difficult to sell additional metal-working machinery in those markets.

However, it is gratifying now to be able to report that apparently a position of reasonable stability has been reached. The volume of metal-working machinery shipped into Europe from the United States has risen consistently from about \$4,000,000 in 1922 to roughly \$5,000,000 in 1923, in excess of \$7,000,000 in 1924, and returns for the first six months of 1925 indicate further a more rapid expansion.

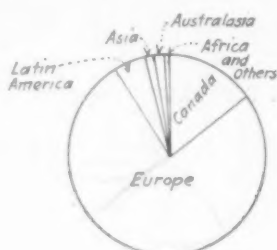
Europe, which absorbed of the total 76 per cent in 1913, took only 32 per cent in 1922, 36 per cent in 1923, but 50 per cent in 1924; preliminary returns for the first half of 1925 indicate a much larger participation. Asia took less than 2 per cent of this equipment in 1913, 35 per cent in 1922, and about 18 per cent in 1923

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and 1924. Latin America, also, is rapidly demonstrating its importance as a market for American-made equipment, and it is in this area that we feel the strongest competition from European manufacturers. The Latin American countries took only 5 per cent of our total exports in 1913, but in 1922, 1923 and 1924 the participation approximated 14 per cent. The demand



Total 1924 - \$14,590,000



Total 1913 - \$16,097,000

Comparison of Distribution of American Exports of Metal-Working Machinery, 1924 vs. 1913. Shipments to Europe have fallen off heavily; those to other destinations (except Canada) have increased still more heavily

from Canada also indicates a substantial and growing market for American equipment of this kind in that area.

Separate Countries Considered

It is even more interesting to consider the experience in individual countries, because this provides a guide as to the sales policies that should be adopted by our exporters of metal-working machinery. Considering first the markets of Asia, and comparing our pre-war experience with that of the past three years, it will be seen that Japan, which ranks third in importance among all of our foreign markets for metal-working machinery, is absorbing rapidly increasing quantities of American equipment. In spite of conditions in that country which have been unfavorable, the business has shown steady growth during 1922 and 1923, and in 1924 took nearly twenty times the volume of American metal-working machinery that was absorbed there in 1913.

British India is another important market not adequately cultivated by most of our manufacturers, but in 1922 it absorbed \$2,400,000 worth of American metal-working machinery, compared with only \$44,000 in 1913. In other words, in 1922 India absorbed over fifty times as much of this machinery as in 1913. Unfortunately, this trade with India is falling off rapidly; in 1924 it was only \$336,000. But even this was eight times the 1913 total and these figures will probably indicate the importance of giving more careful attention to this market.

Similarly, conditions in China have been unfavorable. Political and financial difficulties of many kinds have developed but, in spite of this, China in 1922 absorbed probably twenty times as much American machine tool equipment as in 1913. Even in 1924, in the face of disturbed conditions, China ranked twenty-second among our foreign markets for machinery and absorbed a total greatly in excess of the pre-war level.

Our manufacturers of the simpler types of metal-working machinery would do well to give more careful attention to the markets of Asia. In a general way, these remarks apply also to various South American countries. Mexico, Cuba, Argentina, Chile and Peru are all absorbing a much larger volume of American machine tools than in pre-war years. Brazil is the only market that seems to be falling off and there are reasons to believe that this situation will correct itself as soon as the general business situation in that country improves.

German and British Sales

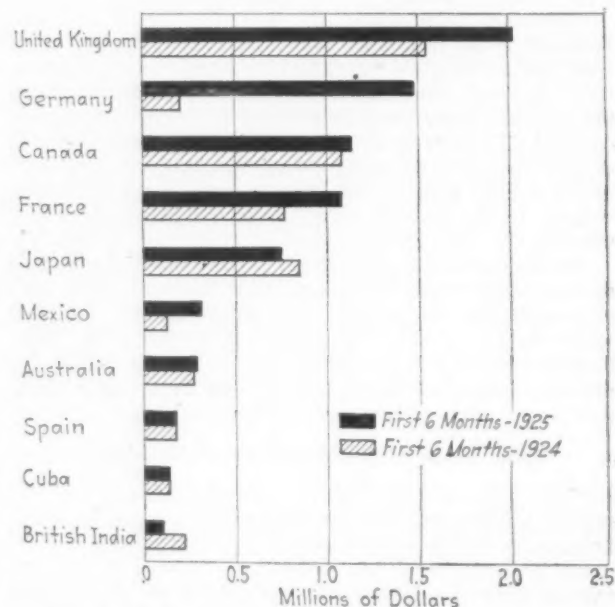
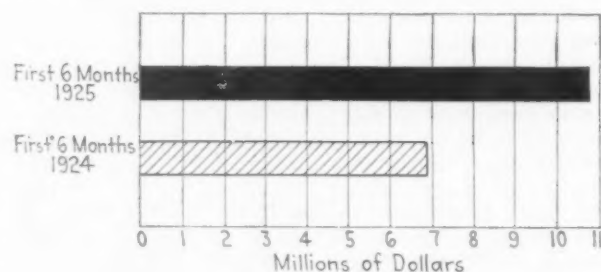
The situation in Europe, however, is far more interesting and it is in these markets that our manufacturers of highly specialized production equipment find their best markets. In pre-war years, Germany ranked first, absorbing more American metal-working machin-

ery than any other country. This trade approximated \$2,250,000 a year. Obviously, all of this was interrupted by the war and even after the Armistice no important sales could be made there, because of import embargoes established by that government.

These embargoes were lifted only in 1924 and the volume of business shown during the earlier years represents only the small amount for which import licenses could be secured. Since the embargoes were lifted there has been a rapid increase in the volume of business done, through the latter part of 1924 and up to the present.

Shipments to Germany rose from \$77,000 in 1922 to \$209,000 in 1923, to \$545,000 in 1924 and, for the first half of 1925, the total approximates \$1,500,000, or say, seven times the volume of business executed in the corresponding months of last year. When one considers the nature of the competition our manufacturers experience in the world's markets from German sources, this record is a marked testimonial to the superiority of American metal-working machinery.

In pre-war years England ranked next to Germany as a buyer of our metal-working machinery and there has been a steady absorption of American machinery of these types in that market for a great many years. As compared with a pre-war average of about \$2,000,000 a year, England absorbed nearly \$20,000,000 worth



Heavy Gains Were Registered in the First Half of 1925, Over 1924. At top are shown the total American metal-working machinery exports; below is the movement to our chief customers

in 1916 and the volume shipped there continued large throughout the war and the post-Armistice boom. The low point in this trade was reached in 1922, when the shipments to the United Kingdom approximated \$2,000,000. This in turn was expanded to \$2,400,000 in 1923, \$3,100,000 in 1924, and the first half of 1925 indicates a further gain of about 30 per cent.

When it is remembered that British machine tools are perhaps the most serious competitors of American equipment in the world's markets, these returns afford a striking testimonial to the merits of the American product. For reasons that require little comment, the trade with Russia, Belgium, the Netherlands and

Sweden has shown some decrease. But considering the volume shipped to the United Kingdom, France and Spain, and allowing for the conditions in Germany, Russia and elsewhere, the markets of Europe have shown a gratifying recovery.

Adequate Sales Effort Needed in Future

It seems that the time has come when conditions justify more careful sales work on behalf of American machinery in all of these markets. Our prospects for trade depend not so much upon political and other conditions as upon the energy with which our products are represented there. Too often, American machinery is not sold but rather it sells itself and, while a few American manufacturers have developed carefully executed plans for sales effort throughout the world, too many others have failed to take full advantage of their opportunities in this respect. We find certain manufacturers, whose export ratio is negligible, competing with others who manage to export anywhere from 25 to 50 per cent of their production.

The really big thing lying before us, in connection

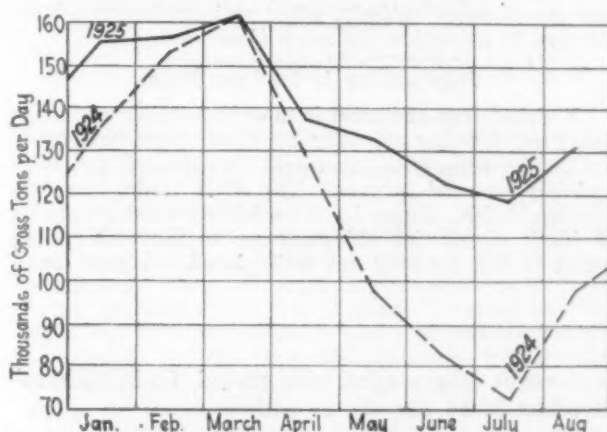
with the foreign trade outlook in the machine tool field, is not so much the condition of the various foreign markets; many of these are really hungry for American equipment. Nor is it a matter of foreign competition, for in reality most often American equipment can be found which is greatly superior to that offered from abroad. This statement is supported largely by the shipments constantly being made from this country into England and Germany. But the big problem lies in the inadequate sales effort made on behalf of American equipment in all foreign markets.

The Department of Commerce in Washington will be delighted to cooperate in the solution of any of these problems and there are as many solutions as there are producers and markets. One plan which has been creating great interest recently has been the suggestion that non-competing manufacturers form groups for collective sales effort abroad. By placing their agencies in the various countries, so far as practicable, with the same dealers in each country, the collective effort of the group may be stronger than would be possible if each manufacturer were to carry out his program alone.

AUGUST STEEL OUTPUT

Increase Over July 12,941 Tons Per Day or About 11 Per Cent

The steel ingot production of the country in August registered a marked increase over July and reversed the downward trend of recent months. At 131,694 gross tons per day the August output was 12,941 tons per day in excess of the July daily rate or an increase of about 11 per cent. This compares with a decrease in July from June of 7.2 per cent. A year ago the August production was only 98,188 tons per day.



Striking Similarity in the Curves of Steel Ingot Output (Daily Averages) for the Two Years Is Shown. Both downturns came in March; both upturns in July. And the two March figures were almost identical

The statistics of the American Iron and Steel Institute show that the August output of the companies which made 94.43 per cent of the country's total in 1924 was 3,233,315 tons. Assuming that the 5.57 per cent not reporting produced at the same rate, a total August production is indicated of 3,424,034 tons. The corresponding annual rate is about 40,950,000 tons, or about 76 per cent of capacity.

The table gives the production by months of the different kinds of steel, together with the estimated daily rate for all companies.

Monthly Production of Steel Ingots Reported by Companies Which Made 94.43 Per Cent of the Steel Ingot Production in 1924 (Gross Tons)

Months	Open-Hearth	Bessemer	Other	Calculated Monthly Production All Companies	Approximate Daily Production All Companies
1925					
Jan. ...	3,262,748	689,996	11,960	4,198,564	155,502
Feb. ...	2,931,964	602,042	13,014	3,756,243	156,510
March ...	3,336,169	614,860	13,633	4,198,520	161,482
April ...	2,857,802	515,715	14,182	3,587,524	137,982
May ...	2,754,130	497,708	13,790	3,458,253	133,010
June ...	2,538,988	476,945	12,490	3,207,056	123,848
July ...	2,444,969	457,095	13,547	3,087,590	119,753
Aug. ...	2,696,667	523,734	12,914	3,424,034	131,694
8 Mos. ...	22,823,437	4,378,095	105,530	28,917,784	129,699
1924					
Jan. ...	2,766,534	667,032	12,577	3,649,913	135,182
Feb. ...	2,902,641	695,905	14,085	3,826,246	153,050
March ...	3,249,783	706,801	15,260	4,206,699	161,796
April ...	2,575,788	573,381	12,356	3,348,466	128,787
May ...	2,060,896	425,099	6,648	2,640,034	97,779
June ...	1,637,660	310,070	2,622	2,065,676	82,627
July ...	1,525,912	241,880	5,162	1,877,789	72,223
Aug. ...	2,042,820	361,781	5,764	2,552,891	98,188
8 Mos. ...	18,762,034	3,981,949	74,474	24,167,714	116,191
Sept. ...	2,252,976	409,922	6,864	2,827,625	108,755
Oct. ...	2,505,403	438,468	7,058	3,125,418	115,756
Nov. ...	2,479,147	459,349	8,403	3,121,149	124,846
Dec. ...	2,811,771	546,506	11,707	3,569,251	127,279
Total ...	28,811,331	5,836,194	108,506	36,811,157	117,984

Efficiency of Automobile Foundries Is Growing

Robert Crawford, president Atlas Foundry Co., Detroit, was the guest of the New England Foundrymen's Association at its first fall meeting on Wednesday evening, Sept. 9, at the Exchange Club, Boston. There were present 39 members and guests. Mr. Crawford gave an informal talk on foundry conditions in Detroit today and yesterday, paying particular attention to the automobile industry. In the early days of the industry, he said, some of the foundry department heads obtained their positions through "pull," and there was no little inefficiency. He referred to one foundry in which the loss in castings ran as high as 50 per cent.

Subsequently there was a reorganization in management and a general betterment of foundry practice. Today this foundry is having not more than 2½ per cent loss in castings.

Mr. Crawford spoke of the efficiency of the Ford Motor Co. foundry with its daily melt of 2300 tons. The Ford foundry and machine shop are practically one, there being no intercepting wall, and product is handed on the belt system. Mr. Crawford impressed on members of the association the importance of keeping foundry cost systems, regardless of the size of the foundry. Representatives of the Hunt-Spiller Mfg. Co., Boston, started a short discussion on foundry sands following Mr. Crawford's talk. R. F. Harrington, president, presided.

Lack of Orders Hampers Europe

England and Continent Suffer Alike from Waiting
Policy of Buyers—No Immediate
Improvement in Sight

(By Cablegram)

LONDON, ENGLAND, Sept. 14.

THERE is a slightly improved export demand for pig iron, including some from the United States for foundry grades and hematite. But domestic consumers are still abstaining from participating in the present cheaper prices.

Foreign ore is dull. Bilbao Rubio is held nominally at 20s. (\$4.84) c.i.f. Tees.

Finished steel is quiet.

August exports of pig iron were 26,857 tons, of which 2830 tons went to the United States. The total exports of iron and steel amounted to 287,789 tons.

Sheets and Tin Plate

Tin plate bars are easier, with sales at £6 7s. 6d. (\$30.86) delivered. Tin plate manufacturers are to meet Tuesday [Sept. 15] to consider an output pooling scheme, which probably will be adopted. The market, meantime, is quietly steady, with fewer sellers and at lower figures. Options have been done at 19s. 6d. (\$4.72) basis, IC, f.o.b. works. Eastern demand for light weights continues.

Galvanized sheets are quiet and easier.

Black sheets are dull. There is a little Japanese inquiry, but practically no business.

On the Continent of Europe

Obscurity pervades the Continental position. The Belgian labor dispute continues, but prices are on the easy side. Sheet bars have been sold at £4 17s. (\$23.47) f.o.b.

German steel manufacturers are proposing a combine with 800,000,000 marks (\$190,500,000, at par) capital. Negotiations for the formation of a German plate syndicate are proceeding.

Ten German furnaces were blown out in August. The Deutsch-Luxemburg Bergwerks & Hütten is blowing in a second furnace at Mulheim. [There are four blast furnaces at that plant.]

British Heavy Steel Lines Suffering from Lack of Orders

LONDON, ENGLAND, Sept. 3.—The general position of the iron and steel trades here is without change, and there is still no sign of any marked revival in business. Foundry and forge iron are both in poor request and makers still agree to accept less money to relieve their stocks, but the orders are not forthcoming. The export buying of Cleveland is at a low ebb, owing to the continued competition from Continental sources, mainly French, Belgian and Luxemburg. Scotland also has been a moderate buyer of foreign iron, and in a lesser degree sales have been effected with Wales. America also has bought from the Continent.

Hematite, on the other hand, has been in improved request, Yorkshire consumers having come in to cover moderate requirements, but the export trade in this article is still poor. The direct result is that more furnaces are damped and prices still fall. The latest to adopt this policy is the Ulverston Iron Works, which has closed down entirely, after maintaining one blast furnace in operation for some time past.

Shipbuilding in Parlous State

Finished iron and steel is in even a duller state, the heavy mills being specially affected. Few new boats are on the slips, with the result that the call for shipbuilding material is poor. The sheet trade, however, has been brisk. Japan has been buying good quantities of black sheets for shipment up to November, and works in this country are well placed. A good busi-

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.84 per £, as follows:

Durham coke, del'd..	£0 19s.		\$4.60
Bilbao Rubio ore...	1 0 1/2		4.96
Cleveland No. 1 fdy.	3 12		17.42
Cleveland No. 3 fdy.	3 8		16.46
Cleveland No. 4 fdy.	3 7		16.22
Cleveland No. 4 forge	3 6 1/2		16.10
Cleveland basic	3 9 1/2		16.82
East Coast mixed...	3 15		18.15
East Coast hematite	4 19		23.96
Ferromanganese	15 10		75.02
*Ferromanganese	15 5		73.81
Rails, 60 lb. and up..	8 5	to £9 0s.	39.93 to \$43.56
Billets	6 10	to 7 5	31.46 to 35.09
Sheet and tin plate			
bars, Welsh	6 7 1/2		30.86
Tin plates, base box..	0 19 1/4	to 0 19 1/2	4.66 to 4.72
			C. per Lb.
Ship plates	8 0	to 8 10	1.73 to 1.84
Boiler plates	11 10	to 12 0	2.48 to 2.59
Tees	8 2 1/2	to 8 12 1/2	1.75 to 1.86
Channels	7 7 1/2	to 7 17 1/2	1.60 to 1.70
Beams	7 2 1/2	to 7 12 1/2	1.54 to 1.65
Round bars, 3/4 to 3 in.	8 12 1/2	to 9 2 1/2	1.86 to 1.97
Galv. sheets, 24 gage	16 2 1/2	to 16 5	3.48 to 3.61
Black sheets, 24 gage	11 5		2.43
Black sheets, Japanese			
specifications	15 5		3.30
Steel hoops	10 15	and 12 10*	2.32 and 2.70*
Cold rolled steel strip,			
20 gage	18 0		3.89

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron:(a)				
Belgium	£3 2s.	to £3 3s.	\$15.00	to \$15.24
France	3 2	to 3 3	15.00	to 15.24
Luxemburg	3 2	to 3 3	15.00	to 15.24
Basic pig iron:(a)				
Belgium	3 1	to 3 2	14.76	to 15.00
France	3 1	to 3 2	14.76	to 15.00
Luxemburg	3 1	to 3 2	14.76	to 15.00
Billets:				
Belgium	4 12 1/2	to 4 13 1/2	22.39	to 22.63
France	4 12 1/2	to 4 13 1/2	22.39	to 22.63
Merchant bars:				
			C. per Lb.	
Belgium	5 8	to 5 9	1.16	to 1.17
Luxemburg	5 8	to 5 9	1.16	to 1.17
France	5 8	to 5 9	1.16	to 1.17
Joists (beams):				
Belgium	5 2 1/2		1.11	
Luxemburg	5 2 1/2		1.11	
France	5 2 1/2		1.11	
Angles:				
Belgium	5 4	to 5 5	1.12	to 1.13
1/2-in. plates:				
Belgium	6 16 1/2	to 6 17 1/2	1.48	to 1.49
Germany	6 16 1/2	to 6 17 1/2	1.48	to 1.49
1/4-in. ship plates:				
Luxemburg	6 6		1.36	
Belgium	6 6		1.36	

(a) Nominal.

ness also has been moving in galvanized sheets, India being a large buyer, while other of the main overseas markets, with the exception of Japan, have purchased moderate quantities.

The Admiralty plans to economize and, in this connection, has decided to close down the Pembroke and the Rosyth dockyards, thereby laying 1200 men idle.

Cost of Production a Problem

Various committees are meeting to discuss plans to relieve the depression in the shipyards by insuring that the cost of production be reduced. In view of the fact that the winter months are approaching, it is es-

sential that some definite move be taken, and with this end in view the executives of the various shipyard unions have been meeting. A conference of representative executives is to be held in London on Oct. 6.

It is now decided that the Indian steel manufacturer shall be further encouraged and, as a result, the Indian Tariff Board has recommended that a bounty of 18 rupees (\$6.60, at 36.6c. per rupee) per ton on 70 per cent of the total steel ingot production of the Indian works be granted from Oct. 1, 1925, to March 31, 1927, with a maximum of 90 lakhs of rupees (\$3,294,000). [This figure was differently reported in cablegram of Sept. 7, published on page 692, Sept. 10.]

LUXEMBURG MARKET DULL

Prices Show Little Change—Slight Improvement at End of August

LUXEMBURG, Aug. 31.—During August the market remained generally inactive, for several reasons: the holiday period, the Belgian strike of the mechanical and metallurgical industries, the financial difficulties in Germany, etc., not omitting the increasing number of unemployed in Great Britain and in Germany. Prices, however, have remained nearly stationary during this dull period.

Within these last few days the market seems to steady itself slightly and the volume of orders has somewhat increased in importance, which has been reflected by prices. Today quotations read: for foundry iron No. 3, 330 Belgian fr. (\$14.78 per gross ton); basic blooms, £4 11s. 6d. (\$22.19); largegets, £4 16s. (\$23.28); beams, £5 2s. to £5 3s. (1.10c. to 1.12c. per lb.); bars, £5 8s. (1.17c.); sheets of 5 mm. (No. 6½ gage) and over, £6 5s. (1.35c.).

BELGIAN MARKET WAITS

Hopes Entertained of Settling Steel Strike—Exchange Rates Are a Burden

ANTWERP, BELGIUM, Aug. 28.—The market remains dull. We are in the period of holidays, while the strike goes on as before. Nevertheless the market may be called bad. New proposals for the settlement of the strike, worked on by the National Committee, were submitted to both parties. The final results are not yet known, but the proposals, although put forward by the strikers, probably will gain a good majority. Nearly an entire unanimity was obtained at the different assemblies held in the districts of Charleroi by makers and groups of men. The same seems to be the case for the district of Liege, Brabant and the Borinage. Only in the district of Ghent the majority manifested itself against resuming work. In accordance with the terms of the proposals, work is to be started two days after makers have started the plants.

No doubt the trends for several products will be influenced by the new situation. Business remains languishing. Transactions with abroad are more limited than ever. Inland consumption may, however, recover. During these last days, since the end of the strike is expected, a good domestic demand has appeared. Furthermore, deliveries which had been postponed are now claimed. But orders available now will not give the works their full activity. Business is still far from looking up again in such a short time.

On the other hand, the high exchange rates and their continual fluctuation make prices still more disturbed. Also, foreign competition, suffering from want of orders from abroad, is becoming terribly strong on our market. Incertitude continues to prevail, from all points of view.

Finished Steel.—Dead calm, notwithstanding the expectation of resuming of steel plants. The market is

as weak as a fortnight ago. No business except perhaps some small orders has been placed. Prices have dropped again somewhat, but are not yet meeting the offers coming from foreign buyers. English buyers, for instance, appear interested only in the purchase of bars at prices such as £5 5s. and £5 6s., equaling \$25.50, or 1.14c. per lb. For such commodities £5 7s. and £5 8s. are the prices quoted, i.e., about \$26, or 1.16c., f.o.b. Antwerp. The home price was 570 and 575 fr., but without business, on account of the strike.

Beams, being also weaker, were offered at £5 3s. and £5 4s., f.o.b. Antwerp, i.e., for a good specification, under \$25.30 (1.13c.). A good deal of demand for wire rods is on the market. Belgian prices, however, being £5 15s. and £5 18s. per ton (\$27.90 and \$28.63), f.o.b. Antwerp, are too high to develop business here. Prices are approximately as follows:

Bars	£5 8s. or	\$26.00 (1.16c. per lb.)
Beams	5 4	25.30 (1.13c.)
Angles	5 8	26.00 (1.16c.)
Channels	5 4	25.30 (1.13c.)
Rods	6 0	29.00 (1.29c.)
Corrugated bars	6 2 6d.	29.75 (1.33c.)
Steel hoops	7 0	34.00 (1.52c.)
Cold rolled hoops	11 10	57.00 (2.54c.)
Wire rods	5 15	28.00

Sheets.—Weak, especially for the heavy and middle thickness. Prices for thin material had to give way on account of foreign competition. No important business seems to be on the market. Prices may be named as follows:

Thomas steel sheets—		
¾-in. and more	£6 10s. or	\$31.50 (1.41c. per lb.)
¾-in.	7 2	34.50 (1.54c.)
¾-in.	8 5	40.00 (1.79c.)
¾-in.	8 15	42.60 (1.90c.)
Checkered plates	7 0	34.00 (1.52c.)

Iron.—No business. Very small production, but also no demand. The price for the ordinary quality would be £5 12s. about, equaling \$27.50, with \$34 for the special No. 4 quality.

Blooms, Billets and Slabs.—Production is small and domestic requirements are insignificant. The prices interesting the foreign and especially the English buyers remain much under the prices acceptable by our makers. Belgian prices have a semblance of firmness and run approximately as follows:

Ingots	£3 18s. or	\$19.00
Blooms	4 12	22.30
Billets	4 15	23.00
Slabs	5 0	24.30

Other Continental makers show a disposition to accept business at lower prices. So it is that billets were offered on our market at £4 12s. and £4 12s. 6d. (\$22.30 and \$22.42), f.o.b. Antwerp.

Pig Iron.—Purchases are limited; prices remain weak. For the small orders available, quotations are 325 to 335 fr. (\$15.25 to \$15.75). For good quantities and for export the price may be as low as 325 fr. per metric ton f.o.b. Antwerp, i. e., \$15.25.

Semi-phosphorus pig iron with phosphorus 0.7 to 1 per cent is quoted 380 fr., equaling \$17.20 per ton, f.o.b. Antwerp. Better quality with phosphorus 0.5 to 0.8 per cent is offered at 400 fr., about \$18.20.

Coke.—Remains weak. Demand is small. Stocks increase. Prices have given way slightly.

Russia Shows Economic Recovery

Natural Forces Overcoming Blight of Soviet Rule—Iron and Steel Output Growing Steadily

BERLIN, GERMANY, Sept. 1.—Recovery of Russia's heavy industries, as reported from here six months ago, has made considerable further progress. Direct reports from Moscow, on the eve of the new business year, beginning Oct. 1, show prospects distinctly good. It is almost certain that this new business year 1925-26, will see large purchases of foreign machinery and of production apparatus generally. A main cause is the good harvest.

Even if the official estimate of grain crops, totaling 4000 million puds (approximating nearly 70 million metric tons), as against 2560 in the famine year 1924, and 2800 in 1923, is too optimistic, it is certain that there will be a large surplus for export. Large orders are already being given abroad for textile machinery, farm machinery, electro-technical articles and ware generally.

National Recuperation

Recovery of Russian production is an undoubted fact. In view of the hampering effect of industrial nationalization, which Soviet official organs sometimes admit, the recovery must be ascribed to the natural recuperative forces of the nation.

Agricultural production in 1924-25 is placed by the State Planning Board report at 10,236 million roubles or 87 per cent of that of 1913. (Comparisons for 1913 refer to the present area of all the Soviet Republics). Forestry and fisheries production are put at 15 per cent more than in 1913. Production of industries worked on factory principles reached 70 per cent of that of 1913. The industrial program for 1925-26 provides for output worth 5275 million roubles against 3950 million roubles in 1924-25, and 5620 million roubles in 1913. Production of home industries and petty industries will about equal that of 1913.

Iron and Steel Production Gaining

The output program for the metal industries has of late been fairly well fulfilled, up to 98 per cent, and in less important branches more than 100 per cent. The program was lately increased. For the business year 1924-25 the original program provided for an output valued (at pre-war prices) at 276,216,000 roubles; but in April last this estimate was increased to 349,743,000 roubles. The chief items of the increased program were:

	*Roubles
Iron and Steel	138,920,000
Non-ferrous metals	40,047,000
Agricultural machinery	31,636,000
Other machinery	108,370,000
Shipbuilding	12,964,000

*The pre-war rouble was worth about 50c.

Production of iron, steel and rolled goods as reported for the second and third quarters of the business year, embracing January to June, 1925, in thousands of puds, with equivalents in gross tons:

	Pig Iron		Steel		Rolled Goods	
	Report	Tons	Report	Tons	Report	Tons
January	5,399	86,940	8,730	140,570	5,610	90,330
February	5,100	82,120	8,300	133,640	5,650	90,980
March	6,160	99,190	9,230	148,610	6,000	96,620
April	6,660	107,240	9,250	148,940	6,325	101,850
May	7,804	125,660	10,197	164,200	7,423	119,510
June	7,869	126,710	10,943	176,210	7,880	126,890
Half Year	38,992	627,860	56,650	912,170	38,888	626,180

The whole output of pig iron in the business year 1924-25 is estimated at 72,971,000 puds (1,175,000 gross tons) against 257,847,000 puds (4,152,000 gross tons) in 1913. The iron industry therefore still lags a long way behind, but its recovery to nearly a quarter of pre-war production records progress, in view of the fact that output in the worst year fell to 4 per cent of pre-war production. The present chief obstacle is

shortage of capital. For fulfillment of the program of 1925-26 for all industries capital investment (mostly on re-equipment) totaling 1922 million roubles must be made; for fulfillment of the iron and steel program 143,360,000 roubles, whereof 88,000,000 roubles are for iron and steel works, and 50,800,000 roubles for engineering works.

Concerning efficiency in the metal industries optimistic reports, in which there are some discrepancies, are given. A report of the Supreme Council of Economy puts per capita output in the smelting, steel, and rolling mill branches at 81 per cent of the pre-war, which if correct is fairly satisfactory, because the same authority's figure for 1922 was 38 per cent. In iron ore mining, efficiency is stated to have recovered to 91 per cent. Before the war 70,000 persons were engaged in mining ore of all kinds, but in 1919 and 1920 this industry was practically at a standstill. Since then a recovery has taken place, output in thousands of puds (and equivalent in gross tons) having been:

	1923-24		1922-23	
	Report	Tons	Report	Tons
Iron ore	75,407	1,214,200	26,078	419,920
Manganese ore ..	6,330	101,920	4,361	70,220
Copper ore	5,861	94,360	2,260	36,390
Lead and zinc ores	530	8,535	....	....

The iron ore production program for 1924-25 was 115,500,000 puds, manganese ore 10,300,000 puds, copper ore 7,300,000 puds, lead and zinc 900,000 puds. The actual iron ore production in the first nine months of the year is stated at 1,362,700 metric tons, which would be approximately 83,000,000 puds. From quarter to quarter, production has greatly increased. The Krivoi Rog mines produced 57 per cent of the whole, and nearly doubled their 1923-24 output.

Iron and Steel Production in France

PARIS, FRANCE, Aug. 31.—Out of 220 blast furnaces on July 31, 144 were in blast (141 on June 30), 33 were out (35 on June 30) and 43 were either being constructed or under repair (44 on June 30). Production was as follows in July:

Pig Iron: 724,164 metric tons, against 703,439 tons in June. The daily average in July amounted to 23,350 tons, against 23,430 tons in June. During July the basic iron production totaled 534,699 tons (510,994 tons in June) and 133,371 tons of foundry iron (133,063 tons in June).

Raw Steel: 625,344 tons, against 599,857 tons in June. The daily average in July amounted to 20,160 tons, against 20,000 tons in June. [Apparently Sundays are not excluded.] The production of basic steel for July amounted to 452,504 tons (426,130 tons in June), and that of open-hearth steel to 159,398 tons (161,018 tons in June).

International Trade in Machinery Belting forms the subject of Trade Promotion Series No. 22 of the United States Department of Commerce. The pamphlet, which is of 74 pages, was prepared by E. G. Holt, assistant chief of the rubber division, and may be obtained at 15c. from the Superintendent of Documents, Washington. It goes into the manufacture of rubber, leather and woven belting, giving a statistical summary and detailing the exports from the United States to the principal countries of receipt. Figures are given for the imports of other countries and for their use of belting.

Latrobe Electric Steel Co., Latrobe, Pa., plans extensions to cost \$200,000, one of the new buildings to require two cranes.

The Rockwell Dilatometer for Heat Treating Steel

One of the principles upon which the heat treatment of steel is established is that when the metal, subjected to heat, passes through its critical range, it ceases to expand as was the case prior to entering the range and actually contracts until complete transformation has taken place, whereupon expansion is again resumed.

When volumetric changes in steel subjected to heat are noted by mechanical means of measurement, the



Instrument to Indicate and Record Changes in Dimensions of Metals in Process of Heat Treatment

method is described as the dilatation method. Leading physicists use this method for the exact measurement and study of volumetric and critical transformation. Dilatation measures the changes through the mass of metal. Because dilatation is mechanical, it is not subject to lag in the indication or recording of the results.

A new apparatus for making dilatation measurements has recently been brought out by the Stanley P. Rockwell Co., Hartford, Conn. It is known as the Rockwell dilatometer, which is described as an extremely sensitive, though rugged, apparatus, designed to indicate on a dial and to record graphically the dimensional change in metals undergoing heat transference. Although dimensional changes in the steel are extremely small, this new device magnifies them to such a degree that they may be clearly seen.

The Rockwell dilatometer indicates and records exactly the dimensional changes which occur in heating. These changes are pointed out as far more accurate and important than the less pronounced and less sensitive temperature changes for securing the maximum wear, hardness, tensile strength, and other physical properties desired in the finished work. Absolute control of the rate of heating is claimed for the use of this new device. This is of particularly large importance in hardening tools such as blanking dies, milling cutters, taps, etc.

Civil service examinations for assistant mechanical engineer in the office of the supervising architect, Treasury Department, Washington, and for a junior technologist in the Bureau of Standards, Washington, have been announced, with applications to be filed prior to Oct. 10. The United States Civil Service Commission, Washington, should be addressed for information.

Portable Saw Rig with Self-Contained Dust Collector

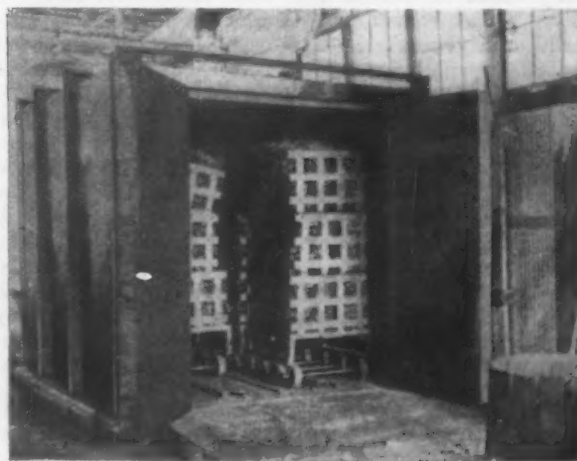
A portable motor-driven sawing rig intended for use in pattern shops, shipping departments and in electrical repair shops for making carbon brushes, has been put on the market by the Koontz Brothers Electric Co., South Bend, Ind. An outstanding feature of the machine is the suction fan, which is direct connected to the motor and which collects the sawdust in a cloth bag suspended from the back of the frame. With this device the rig can be moved to any desirable place and operated without creating dirt and dust. The machine is mounted on cast iron legs, two of which are provided with casters.

An adjustable table top is another feature. This top, 14½ in. x 22½ in., is provided with hinges for raising or lowering the table for cutting grooves or changing saws, and set screws on the hinges permit of squaring and leveling the table. The table top is provided also with adjustable guides for ripping or cutting off material up to 2 in. in thickness. The machine takes current from a light socket, and is provided with 25 feet of heavy rubber covered cord with an attachment plug. It is equipped with an 8-in. saw running on a ball-bearing arbor shaft, driven by a ¼-hp. Westinghouse repulsion type motor, 60 cycles, single phase, 110 and 220 volts. For electrical repair shops an attachment is available which permits using a carbondrum wheel for making carbon brushes.

Tempering Bed Springs with Electric Heat

In the manufacture of bed springs, for giving the springs a good temper, the Royal Blue Spring Co., Cincinnati, has been using an electric oven.

The spiral springs are rolled into shape on specially designed machines, their taper being controlled in the process by an arrangement of cams. The springs are



Electric Heating Oven for Tempering Steel Bed Springs. They are run into the oven in baskets on wheels

then packed in steel baskets, loaded on trucks and the trucks rolled into the electric oven. This electric oven is 10 ft. long, 6 ft. wide and 6 ft. high, and has Westinghouse type C heaters arranged along the sides, whose total capacity is 60 kw. It is stated that the oven can be loaded to capacity (1800 lb. of springs) without injuring the quality of the work.

Four inches of insulation on all sides of the oven are provided. At 275 deg. F. the outside of the oven is cold, and at 475 deg. it is only moderately warm. Starting cold, and fully loaded, it comes up to the operating temperature of 475 deg. in about 2 hr. When empty it will come up to temperature in about 1½ hr.

"The Influence of Tungsten on the Properties of Medium Carbon Steels Containing Nickel and Chromium" is the title of R. D. Report No. 65 of the research department of the Woolwich Arsenal, Woolwich, England.

PROGRESS IN CAST IRON

Recent Developments Leading Up to Special Irons and Heat Treatment

Some interesting facts and summations are found in an article in the *London Iron and Coal Trades Review* on the subject, "Recent Progress in Cast Iron." The author is given as Fontoid. The main parts are reproduced below:

Twenty years ago metallurgical students were taught that 8 tons per sq. in. tensile strength could be expected from bad cast iron, 10 tons from normal, while 12 tons could be associated with good material. Professor Turner, about this time, established the influence of silicon on cast iron, and also pointed out that the highest strength was to be associated with the carbon eutectoid (0.89 per cent) composition. This research did much to revolutionize the better-informed sections of the iron-foundry industry, and from that time onward the grading of pig iron by fracture became related to composition, or in reality the silicon content.

Sulphur and Wearing Qualities

Cook and Hailstone next discovered that high tests were associated with the phosphide eutectic network structure, but no generally accepted theory as to why this is so has yet been evolved. Up to the beginning of the war sulphur was considered to be the culprit if any defect arose, and it was left to Young to show that, if adequately balanced by manganese, this element was useful for insuring a good wearing surface in marine engine cylinders of various types.

Semi-Steel

Throughout the whole of this period, and probably previous to it, foundrymen had been in the habit of adding steel to the cupola charge, which they found increased the ordinary tests. Someone with a commercial instinct christened this "semi-steel," and undoubtedly it helped foundrymen to produce a better material because, in general, the total carbon content was lower and the graphite was in a better condition. In the smaller sections well-made semi-steel could be relied upon to give about 16 tons per sq. in. tensile strength. Cold-blast, semi-cold-blast, and many other pig irons, many of which were of a synthetic character, enabled the easy production of high-tensile cast iron, but the product has until quite recently suffered from the same defect; that is, due to the slower cooling conditions inherent in large sections, the graphite is precipitated in a coarse condition. These can be regarded as so many cavities, and such iron is obviously weaker. Many designers have thickened cast iron members of a structure with the object of bringing about increased strength, whereas in reality they have actually weakened it.

Pearlitic Iron

Modern thought thus became concentrated on the production of a cast iron, the strength of which would not be affected by cross-sectional area. Smalley, in 1923, demonstrated that cast iron which had the shortest cooling range made for general soundness. About this time Professor Bauer described a German process of producing cast iron, now become generally known as "Perlit," which was based upon stabilizing of the total carbon plus the silicon contents at 4 per cent, and teeming the iron into molds heated to a definite temperature varying with the average section of the casting to be made. The conditions are so arranged that the maximum amount of carbon is in the combined condition, and the minimum as graphite, producing an all-pearlite-graphite microstructure. "Perlit" cast iron is stated to give almost the same strength in a large section as a small one. The iron which is used is one which should yield a white, or at least mottled, iron if cast in a cold mold. Just as a gray iron is rendered "whiter" by the application of chills—that is, by having the rate of cooling speeded up—so, too, a normally white or mottled iron will be rendered grayer by having the cooling speed retarded. Though the new iron regularly gives some 19 tons per sq. in. in tensile, it is

in toughness and in dynamic testing where the highest claims are made. As the important firm of Holts, the ship owners, have interested themselves in the exploitation of this process in England, it seems probable that the new material will be specified for the more important gray iron castings which they purchase.

Mechanite

In America a new cast iron, bearing the trade name of "Mechanite" has been placed on the market, and Prof. Enrique Touceda has claimed for it properties much higher than those usually to be associated with gray cast iron. A process, which is as yet secret until the granting of patent rights, gives tests which are almost bordering on the extravagant. This method, known as the Thyssen-Emmel process, is said not to involve the use of heated molds. The Yorkshire Testing Works, Limited, of St. Peter's Close, Sheffield, on a sample which they received reported the analysis to be:

	Per Cent
Total carbon	2.64
Combined carbon	0.83
Graphitic carbon	1.81
Silicon	2.14
Sulphur	0.159
Phosphorus	0.25
Manganese	1.37

On a 0.81 in. diameter test bar, a tensile strength of 26.79 tons per sq. in. was registered, together with a 1.0 per cent elongation on 2 in. A transverse 1.18-in. diameter bar tested at 12-in. centers broke at a load of 49 cwt., associated with 0.14-in. deflection. The Brinell hardness number was 255.

It is only since the introduction of these special irons—yet ordinary, inasmuch as there are no alloy additions—that any elongation has been registered. "Perlit," it is reported, regularly gives about a 1.0 per cent stretch before breaking.

Heat Treatment

The next phase in the amelioration of cast iron will be in the direction of heat treatment, the experimenters always bearing in mind the production of the least dangerous form of graphite. It is highly probable that the large plates of graphite contain relatively large quantities of gas, which is no longer present in the nodular graphite to be associated with the modern developments.

Load Tests for Refractories

In the construction and operation of metallurgical and industrial furnaces, it is highly desirable to have accurate knowledge as to the load refractories will carry without deformation when heated to the intense temperatures developed in the furnace. Therefore, the ceramics experiment station of the Bureau of Mines, in cooperation with Ohio State University, has been conducting an intensive study of the effect of furnace conditions on the so-called load test for the limit of strength of a refractory. This work, now brought to a close, has yielded fundamental data on the effects of temperature, time of heating, rate of increase of temperature, and other factors affecting the physical condition of the brick. These data have been reduced to simple charts and diagrams, so the furnace operator can easily follow the reactions that may be expected for various conditions of operation, for a large variety of refractory materials.

The Kansas City Structural Steel Co., Kansas City, Mo., has arranged for its employees to double their group life insurance protection in the Metropolitan Life Insurance Co. Some 370 workers are insured and each contributing employee, under a new contract, is permitted to double his insurance protection.

A civil service examination for engineering vacancies in the Bureau of Mines has been announced, with applications to close Oct. 20. For information the United States Civil Service Commission, Washington, should be addressed.

FUEL IN IRON MAKING

Comparison Between British and American Practice in Burden and in Coke

Fuel consumption and burden weights for blast furnaces are discussed in a paper read by Edgar C. Evans before the West of Scotland Iron and Steel Institute. In particular, he makes comparisons between the figures prevailing in Great Britain and figures for the United States, Belgium, Luxemburg and Canada. These comparisons, based on 1923 results, are shown in the table:

Country	Burden (Ore and Limestone), Lb. per Ton of Iron	Coke Consumption, Lb. per Ton of Iron
Great Britain	6,327	2,943
United States	5,311	2,218
Belgium	(a) 5,970	2,398
Luxemburg	(a) 6,899	2,676
Canada	5,341	2,311

(a) Ore only.

In the table the figures for Great Britain are the averages of eight figures given for different districts. Coke consumption varied in these districts from a minimum of 21.9 to a maximum of 31.68 cwt. In the burden the outer limits were 45.8 and 71.70. It happens that the low figures under the two headings were both for the same district and similarly for the high figures. In no case did any British district reach the low coke consumption of either the American or the Canadian furnaces represented in the figures. Two of the British districts showed a slightly lower burden than

either the Canadian or American, but six were higher and several of them much higher.

A specific instance is given in the paper, comparing the average of 14 American furnaces with three West Coast furnaces operated by separate firms. This appears in the second table. The differences in character of ore, in character of coke and of limestone and in the resulting character of the slag are pointed out as accounting for the differences in consumption of fuel and of raw materials.

American Compared with British Practice

	Average of 14 American Furnaces, Lb.	Average of 3 West Coast Fur- naces, Dif- ferent Firms, Lb.
Charge per ton of iron—		
Ore	3,970	3,969
Coke	2,000	2,394
Limestone	906	1,190
Slag produced	1,045	1,285
Iron in ore charged	2,060	.....
Analysis of charge—	Per Cent	Per Cent
Iron in ore	51.90	.....
Silica and alumina in ore ..	9.30	SiO ₂ varies from 12 to 24
Ash in coke	11.60	8.22
S in coke	0.90	1.08
Fixed carbon in coke	86.45	85.65
Analysis of pig iron—		
Si	1.320	2.270
S	0.037	0.019
Mn	1.060	0.610
P	0.155	0.025
Analysis of slag—		
SiO ₂	34.80	38.80
Al ₂ O ₃	14.70	11.10
CaO	43.50	51.80
MgO	4.45	3.14
S	1.57	2.40
MnO	0.89	.....
FeO	0.68	.....

ORE TO LAST 100 YEARS

Geologist Predicts That Lake Superior Reserves Are Good for a Century

The future of the Lake Superior iron ore district was discussed by Carl Zapffe, Brainerd, Minn., geologist of the Northern Pacific Railroad, before the Lake Superior Mining Institute. Mr. Zapffe commented on a paper on the same subject prepared by M. C. Lake. Differing somewhat from Mr. Lake's conclusions, Mr. Zapffe said he did not believe there was any need to worry about the complete exhaustion of the Lake Superior ore reserves for perhaps a hundred years.

"It is true," he said, "that very little effort is being made to find new ore. Why seek more in a large way? The present condition is a healthy condition; the industry as a whole is backed up by sufficient reserves and to have more ore on hand than needed is actually costly and something to be avoided. For a long time present mines can meet any demand for Lake ore the industry may make. If new mines are desired now, explored properties are still available.

"Different companies have different policies. Some companies prefer to follow a more uncertain (and probably more costly) method of seeking additional reserves rather than use what ore is now disclosed. Often such a procedure reacts as a penalty imposed upon the industry; the unused ore continues to be taxed, and the new ore is added to the tax roll. To over-develop one's reserves—to make them last 30 years or more—means, under present accounting, taxing and leasing, making such ores costly and sometimes prohibitive to control. That is pretty well appreciated today, and it is one reason why new ore is not being sought vigorously and some known ores ignored. Just how this may be balanced as between operators no one can tell."

Possibility of Decreasing Demand for Lake Ores

Mr. Zapffe looks to see a gradually decreasing demand for Lake Superior ores. "Many things will cause this, and quite imperceptibly," he said. "Such heavy present consumers of iron and steel products as railroad and auto companies may approach their saturation point earlier than expected. Each year more scrap iron becomes available and replaces more ore than

theretofore. People may become less wasteful; their personal requirements may decrease. Time was when kitchen utensils were of tin plate; now aluminum predominates, and only a few years ago aluminum was not even considered a serviceable everyday metal. Concrete is becoming more commonly used each year. Other substitutes will be more general in all lines. That is the present trend. If we could but foresee now all that will adversely affect the use of iron and steel products, we would be shocked. Such reductions in applications will reduce the anticipated rate of consumption and lengthen the life of the reserves."

He points to the possible development of the Great Lakes Waterway and says if this is built foreign ores, particularly Newfoundland ores, will find it easy to displace Lake ores at many important points. He says also that the Pacific Coast will develop a blast furnace industry and Western and foreign ores will be used exclusively, while the metal made in the West will displace iron now made in the East of Lake ore.

Changing markets must also be considered, Mr. Zapffe said. "The Central West has already made a heavy inroad on Pittsburgh, a heretofore formidable barrier in some respects. With a wealth of iron-bearing formation ranging between 40 and 50 per cent in iron, and with developed and charged-off mines and pits in which to start work anew, it is difficult to imagine that the Lake Superior region is in danger of exhaustion in any term short of 100 years; and then the cycle starts anew on another course."

George A. Newett, Ishpeming, Mich., editor of *Iron Ore*, read a paper on the Marquette iron ore range, in which he stated that, including 1924, this range had shipped 150,240,192 gross tons of ore.

J. E. Marks, Port Arthur, Ont., discussed "The Iron Ranges of Northwestern Ontario."

Annual savings in cost through simplification of varieties are estimated at \$2,400,000 in sheet steel, \$4,500,000 in reinforcing bars, and \$10,000,000 in builders' hardware, according to leaders in these industries, said Ray M. Hudson, chief of the division of simplified practice, Department of Commerce, in a speech delivered Aug. 29 before delegates of the eighth annual industrial conference, held at Lake George, N. Y., under the auspices of the Y. M. C. A. Industrial Department.

GERMAN STEEL IN AMERICA

A New York Dealer Comments on Trade Possibilities Under the New Conditions

C. L. Altemus, 50 Church Street, New York, whose company, the Terminal Steel Supply Corporation, has become the American agent for Wilhelm-Heinrichswerk of Düsseldorf, Germany, has returned from a visit of a few weeks in Germany, during which time he talked with several of the leading steel manufacturers. Regarding Germany's competition in the world steel markets Mr. Altemus makes the following observations:

"We must soon reckon with Germany, if not already, as an energetic and capable contender for a growing share of the world's steel requirements. In the days of the vanishing mark, when it was the height of folly to keep money over night, many mills spent their surplus in enlarging plants and installing better equipment for a new day. Considering the little loss of plant structure beyond high pressure use during the war, Germany today has ample tools and men to produce goods of all descriptions. What she needs primarily is working capital, money for payrolls, raw materials, etc. This lack of capital checks but will not eliminate her competition for world markets.

"Germany is making every possible effort to export steel and to regain the markets lost as a result of the war. This must be done on the basis of price alone, except in the case of certain specialties, because her lack of capital will not permit at present the long-time credits she granted during the old days of her expanding commercial power.

"In the Far East Germany is quoting prices somewhat under those of American manufacturers, and on the Pacific Coast of the United States has been able to

meet local competition for certain lines such as wire products. On the Atlantic seaboard she is not able to meet American, French and Belgian competition on tonnage products, but is making every effort to develop a specialty market here and to establish New York agencies for the sale of such specialties.

"So far as I was able to learn Germany has not sold any steel rails for shipment to this country. I was told on high authority that German mills have bid on rails here but the business went to a Belgian mill."

Mr. Altemus learned that German mills are not greatly interested in rolling to American specifications when doing so means an investment in new equipment which might remain inactive for a considerable period, especially in case that new tariff restrictions were adopted here which would tend to keep German steel out of the United States.

Since the standardization of the mark German wages are not relatively low, Mr. Altemus said. Unemployment is probably on the increase. Economy in operation and overhead is being forced on all German manufacturers by general competition in foreign markets. Refining processes are more in order than increased tonnage facilities. He says that the most interesting development he saw was a new method of refining cast iron.

The German company Mr. Altemus will represent here manufactures wire rope, galvanized oval high tension steel fencing wire, hardened and straightened heddle wire, cord wire, safety pin wire, paragon wire for umbrella frames, cold rolled bright soft strip steel for eyelets, hooks, seals, etc., and cold rolled hardened and polished strip steel for saws, clock springs and corsets. Mr. Altemus was for many years engaged in the export of steel from the United States, having been connected in an executive capacity with the American Steel Export Co. and the former steel division of the American International Corporation.

NEEDLES AND PINS

Considerable Quantities of Steel and Brass Required for Small Accessories

More than \$22,000,000 worth in 1923 is the Census Bureau's record of the output of needles, pins, hooks and eyes and snap fasteners. There were 49 establishments engaged in this work, with a personnel of 7674, of whom 6834 were wage earners. Wages amounted to \$6,703,079 and the value added by manufacture accounted for \$14,351,493. Output and other figures are higher than for 1921, but considerably lower than for 1919, when the value of products was \$29,305,000, value added by manufacture was \$19,078,000 and wages amounted to \$8,810,000, for 9294 wage earners.

Some of the quantities involved are as follows: Needles aggregated 245,998,000 in 1923, with a value of \$5,096,000. Pins made of steel wire come under two heads, those by the pound and those in packs. Those by the pound accounted for 582,554 lb., or about one-fifth of the 1919 figure, which was 2,798,633 lb. Steel pins, in packs of 3360 each, accounted for 997,594 packs. This item was 1,342,119 packs in 1919 and 1,825,673 packs in 1914. The quantity of steel pins has been decreasing.

Pins made of brass wire and reported by the pound amounted in 1923 to 1,263,734 lb., a considerable shrinkage from the 2,180,513 lb. in 1921, but a higher figure than in 1919 and 1914. Pins shipped in packs of 3600 each accounted in 1923 for 1,488,229 packs, lower than the 1,638,035 such packs in 1914, but higher than the figures for 1919 and 1921. Metal hairpins in 1923 were 8,240,326 gross, a sharp drop from the 24,310,433 gross of 1919. Safety pins accounted for 7,878,319 gross in 1923.

Hooks and eyes and snap fasteners and clasps all are reported in "great gross" units. Of the hooks and eyes there were 26,752 units made of steel wire, a progressive reduction from the 654,714 such units in 1914. Made of brass or other wire, hooks and eyes accounted

for 234,394 units, compared with 421,463 units in 1914. Snap fasteners of iron and steel numbered 192,913 units in 1923, a sharp drop from the 1,080,276 units of 1919. Those made of other metals, however, indicated an increase, the figures having been 1,508,656 units in 1923, compared with 1,042,265 in 1919.

New Record in Car Loadings

During the week ended Aug. 29 more cars were loaded with revenue freight than in any other week on record, according to reports of the American Railway Association. The total of 1,124,436 cars surpasses the previous high record of 1,112,345 cars, made Oct. 24, 1924. The only other total exceeding 1,100,000 was 1,102,336 cars, Oct. 17, 1924. The figure for the current week was 44,329 cars higher than for the preceding week. It exceeded by 103,627 cars the corresponding week of last year and by 32,286 cars the same week of 1923.

So far, 35 weeks of the year have accounted for 33,549,472 cars. This, the highest total for the first 35 weeks of any year, surpasses by 1.2 per cent the previous high figure, that of 1923, with 33,155,456 cars. Last year the 35 weeks produced 31,554,058 cars. It appears likely that this year will show a new high record for the annual figures. The highest now is that of 1923, with 49,814,970 cars. October and November customarily provide the highest weekly loadings of the year and it is not improbable that some new weekly records will be made before Dec. 1.

Mechanical stokers sold in the United States in August numbered 91, of 29,865 hp., according to figures of the Department of Commerce. This is the lowest total since January and, with two exceptions, the lowest since 1923. In July the figures were 147 stokers, of 58,719 hp. In August, 1924, there were 94 stokers sold, of 41,931 hp. March, with 131 units and 71,099 hp., was the highest month so far this year.

Conditions Favorable to Further Advance in Pig Iron Prices

Relatively High Rate of Steel Ingot Output Makes Immediate Rise
in Steel Prices Doubtful, but No Weakness Should Develop

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

THE steel industry is gradually rounding the corner of the minor recession which has been under way since January. The situation is not as strong as could be wished, but presumably the bottom has been passed and moderate improvement lies ahead.

The average price of finished steel is as yet barely steady. THE IRON AGE composite price index stood at 2.418c. in August against 2.435c. in July and sagged to 2.396c. in the first week of September. There is good reason to believe that the last named figure will be the lowest reached.

The production of steel ingots turned the corner in July and the increase in August was considerable. The actual tonnage in that month gained 10 per cent, but as some increase is usual, the adjusted index rose only to 109.7, against 104.1 in July.

These indexes are based on an allowance for the normal growth of consumption, the index for each month showing the percentage of the estimated normal figure for the month. It follows that the August production of steel ingots was nearly 10 per cent over the estimated normal. Assuming the correctness of the estimated normal for the month, the recovery of ingot production to a point so considerably above normal and one which is practically the same as the position occupied in February and March, is a significant development.

The considerable gain in steel production is the more notable because of the low level of unfilled orders. As shown in Fig. 1, the production curve lies farther above the curve of unfilled orders than it has done at any time during the period covered by the graph.

The unfilled orders' curve, however, is clearly about to reverse its downward trend. The figure for the United States Steel Corporation decreased in August only 0.7 per cent. Moreover, even this small decrease was partly a normal seasonal occurrence. Accordingly the adjusted index showed little change, being 68.1 per cent of the 1921 average compared with 68.5 per cent

in July. It is probable that unfilled orders will turn upward from this time on.

A study of the statistical position of steel shows that the situation is not especially strong. Certainly it is not one to bring about any sharp advance in prices. The curtailment in production which occurred between January and June was relatively small. At no time did the production curve drop below the line of normal trend and already it is nearly 10 per cent above that line. Unfilled orders are lower than they were at the end of the 1921 depression.

Nevertheless, conditions as a whole favor the conclusion that no further reduction in the average price of finished steel will occur. The outlook for business in general is favorable. The activity of most large steel consuming industries is great. Advancing coke and iron prices insure a firm basis on the cost side. Probably, therefore, steel prices will remain rather stable for a time, with increasing firmness and small upward adjustments in those items which have been reduced to levels out of line with the average trend.

Iron Advance Forecast

IT is now apparent that the real bottom of pig iron production was reached in June and that the low level of prices came in July. Since then there has been a definite turn for the better in both cases. Production has remained about stable for two months with a gradually rising trend, the August average daily output being 1.5% greater than the July figures. Prices are firm with a slight upward tendency.

The outstanding fact shown in Fig. 2 is the position of pig iron production at a point below the computed line of normal trend. The indexes of pig iron production, figured as percentages of the estimated normal for the months of June, July and August, were, respectively, 98, 99.2 and 99.6. This is in contrast to steel ingot output at 10 per cent above the estimated

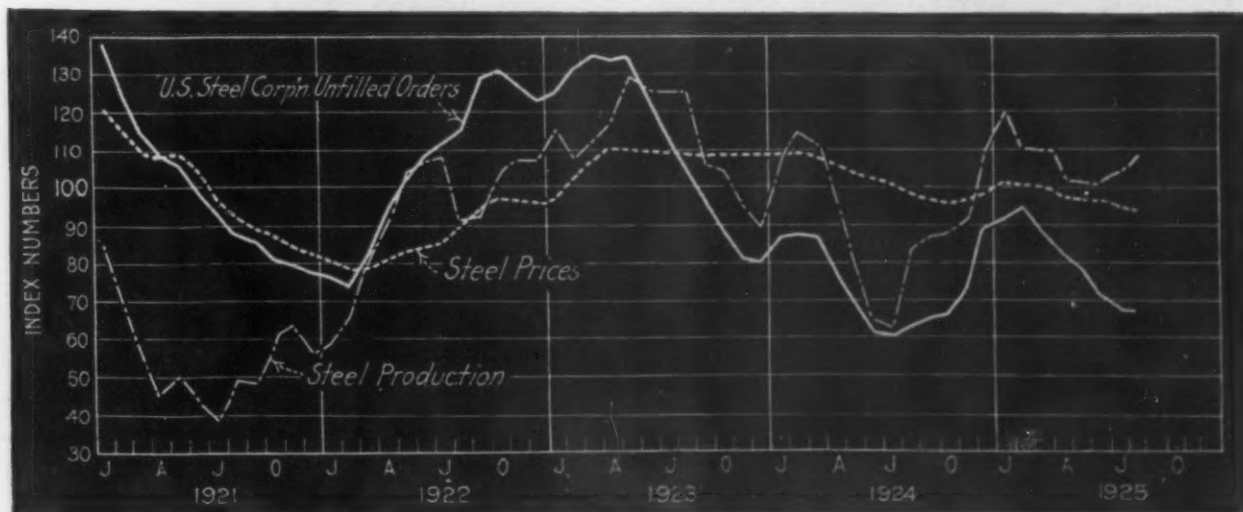


Fig. 1—It Is Apparent That the Curve of Unfilled Orders Is About Ready to Turn Upward, Which Should Aid in the Stabilization of Steel Prices

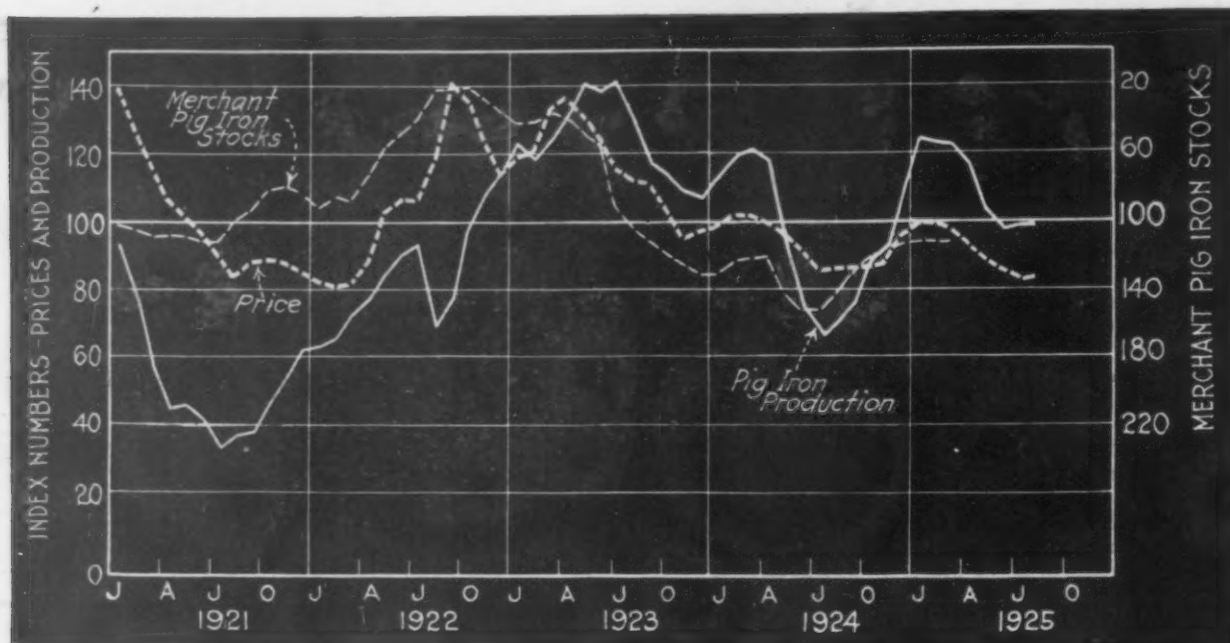


Fig. 2—The Low Level of Pig Iron Production Was Reached in June; Prices Touched Bottom in July and an Upward Tendency Has Been in Evidence Ever Since

normal. This explains in part the greater firmness of pig iron prices and assures continued strength.

Frequently the trend of pig iron production anticipates the course of prices. It is not surprising, therefore, to find that the August price index moved up slightly following the small increases in pig iron production during the last two months. It now seems probable that pig iron prices will move still higher.

Definite information concerning stocks of merchant pig iron is not available, but the last estimate, for June, shows a downward trend and the fact that pro-

duction has been so moderate, and recent buying was so good suggests further decreases. This confirms the conclusion that pig iron prices will advance.

The outlook is for further gains in iron production and prices in spite of the competition of foreign pig iron which holds prices down in the East.

Spread on Many Items Still Small

IN Fig. 3 is shown the trend of THE IRON AGE indexes of coke, pig iron, billets and representative finished steel items. The curves shown make possible

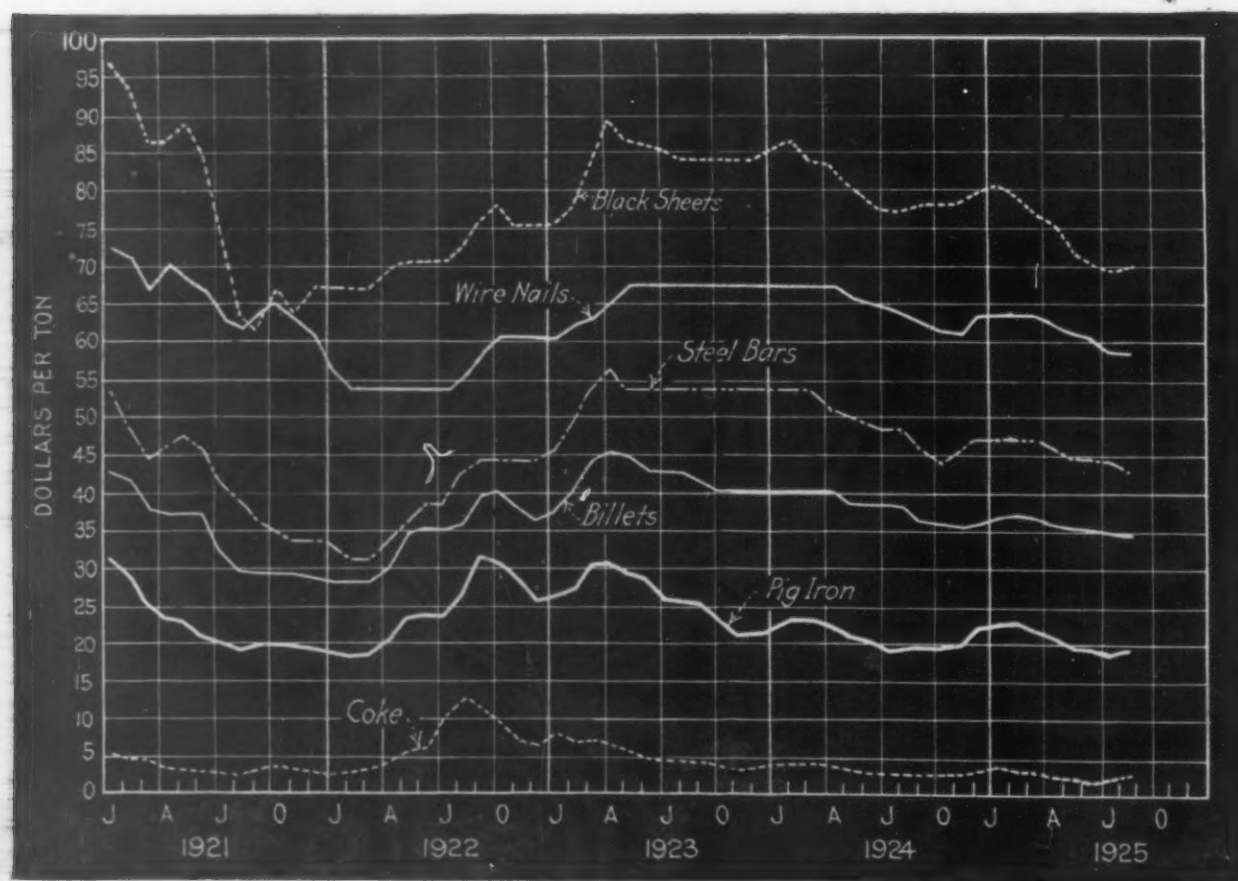


Fig. 3—The Downward Trend of Sheet Prices Has Been Reversed, Though Wire Nails and Steel Bars Have Not, as Yet, Turned the Corner

In This Issue

Pig iron prices may advance further; decline in steel about over.—But high rate of ingot production makes immediate steel price advance unlikely.—Page 755.

Steel Corporation's unfilled tonnage practically unchanged.—Smallest drop since decline began, 26,000 tons, leaves total on Sept. 1 at 3,512,000 tons.—Page 759.

Makers of simpler types of machine tools should look to Asia for sales.—Europe still best market for highly specialized equipment, but Asia and South America best opportunity for development.—Page 745.

More freight cars loaded last week in August than ever before.—First 35 weeks of year also establish new high record for car loadings.—Page 754.

August steel output shows 11 per cent gain over July (12,941 tons per day increase).—Last month also one-third higher than same month in 1924. Mills operate at about 76 per cent of capacity.—Page 747.

Three 250-hp. synchronous motors drive break-down, run-down and finishing rolls in brass mill.—Flexible melting units also feature of new Chicago plant.—Page 733.

Ex-Gov. Nathan L. Miller of New York appointed director and counsel of Steel Corporation.—Myron C. Taylor, lawyer, manufacturer, also appointed a director.—Page 763.

Possibility that demand for Lake Superior ores will decrease.—Western furnaces will use western ores. Great Lakes waterway may permit importation of foreign ores; no danger of ore shortage for 100 years at least.—Page 753.

Commodities that have a production cost should tend to decline in price.—Since over long period, methods will improve; commodities whose supply is limited by nature to increase in price over long period.—Page 760.

Russian iron industry has recovered to one-fourth pre-war level.—Output of ore, pig iron and steel steadily increasing; need of capital limits growth.—Page 750.

American blast furnaces have lowest coke consumption per ton of pig iron.—Figures for Great Britain, Belgium, Luxemburg and Canada show higher coke charges per ton.—Page 753.

One week vacation with pay to all employees with firm three years or more.—Salaried workers receive two weeks under successful plan of Norton Co., Worcester.—Page 743.

Centerless grinding adapted to quantity production of cylindrical ground pieces.—But type of work is limited to pieces of one diameter for through grinding and of one or two diameters for straight-in grinding.—Page 739.

Quantity lapping of cylindrical pieces to precise limits said to be feasible.—Rough and finish-lapping operations done on same laps and equipment.—Page 740.

Brass sometimes cheaper than steel for machining.—Greater speed at which brass may be machined may offset greater initial cost of raw material.—Page 740.

Dr. Richard Moldenke first recipient of Joseph S. Seaman medal, awarded by American Foundrymen's Association.—Dr. Robert J. Anderson given first W. H. McFadden gold medal at same time.—Page 737.

CONTENTS

September 17, 1925

Novel Motor Drive in Brass Mill	733
New Tools at New Haven Exhibition	739
Paid Vacations for Workers.....	743
Export Outlook in Machine Tools	745
Conditions Favor Advance in Pig Iron	755

American Foundrymen Bestow Medals..	737
Corrosion by City Gas.....	738
Floating Steel Roofs for Oil Tanks....	744
Efficiency of Automobile Foundries....	747
Russia Shows Economic Recovery.....	750
Progress in Cast Iron.....	752
Fuel in Iron Making.....	753
Ore to Last 100 Years.....	753
German Steel in America.....	754
More Machinery to South Africa.....	759
Correspondence	762
Nathan L. Miller Corporation Counsel..	763
Australian Iron and Steel Tariff.....	764
Engineers on Air Defense Board.....	764
Cold Rolled Strip Exports.....	764
Southern Steel Rate Cut.....	765
Low Priced Tata Pig Iron.....	765
Denies Unfair Practice.....	766
Coke Wages Not Raised.....	785

STATISTICAL

August Steel Output.....	747
Iron and Steel Production in France....	750
Needles and Pins.....	754
New Record in Car Loadings.....	754

Steel Corporation Unfilled Tonnage....	759
British Iron and Steel Output.....	763

MEETINGS

Steel Treathers Meet.....	764
American Foundrymen's Association...	764

NEW EQUIPMENT

Rockwell Dilatometer for Heat Treating Steel	751*
Portable Saw Rig With Self-Contained Dust Collector.....	751
Tempering Bed Springs With Electric Heat	751

DEPARTMENTS

European Steel Markets.....	748
Editorial	760
Iron and Steel Markets.....	768
Comparison of Prices.....	769
Non-Ferrous Metals.....	781
Prices of Raw and Finished Products..	782
Personal	784
Obituary	785
Machinery Markets.....	786

The Possibilities of Profit

THAT is the message which the makers of machinery brought to the visitors at the fifth annual New Haven Machine Tool Exposition last week. The *possibilities of profit* through new and better equipment were illustrated by operating exhibits under production conditions. Those who did not attend will find in this issue an abstract of the important papers delivered at the technical sessions, as well as a description of the machinery shown by the 110 manufacturers who were represented.

The fact that the exhibition has been incorporated to insure permanent activity is evidence that it has been of real value to the many hundreds of users of machine tools who have made the journey each year. It is a keen appreciation of this value that has led THE IRON AGE to report the exhibits in such detail.

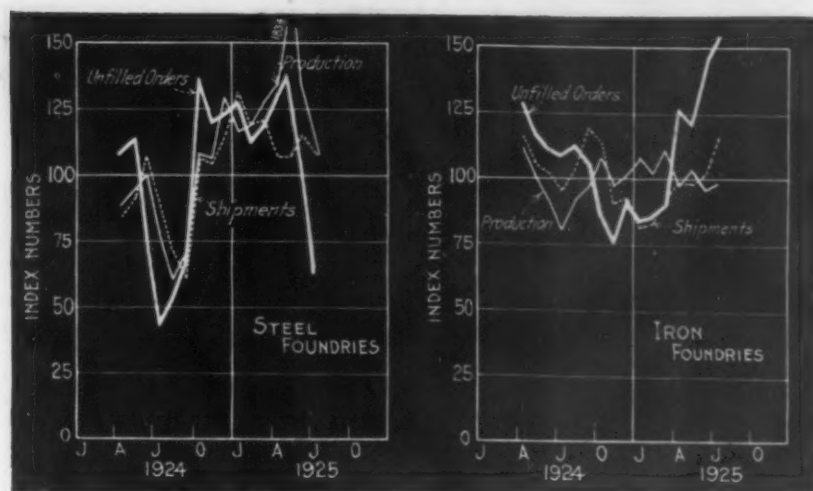


Fig. 4—Pennsylvania Iron Foundries Are in a Better Position Than Steel Foundries, the Decrease in Steel Foundry Unfilled Orders Being in Sharp Contrast to the Abrupt Rise in Unfilled Orders at Iron Foundries in That State

a study of important items in the iron and steel price structure.

It is apparent at a glance that coke prices, largely under the influence of the anthracite coal strike, have moved upward for two months. The average price of pig iron shows the beginning of an upward trend. The relation between coke and iron appears to be about normal, but if anything iron is a little low in comparison with coke.

Billets are shown to be stable and are not far from a normal relationship with coke and iron prices. When compared with finished steel items, however, billets appear to be high. In fact, one of the most striking conclusions to be drawn is that during the general downward movement of iron and steel prices since the spring of 1923, the decline in sheets, nails, bars, etc., has been more rapid than in the case of pig iron.

The average price of black sheets registered a small advance in August. The price of sheets had fallen so far below a normal relationship with iron and semi-finished steel that no further decline was to be expected. Sheets are still the most out of line and in view of the activity in the sheet-using industries, the price should advance further.

The wire-nail average for August was unchanged. The price is below the normal spread over iron, billets or bars. Already a firmer market for nails is reported and some advances seem probable.

Of the six items listed, steel bars was the only one to show a decline in August. This decline brings bars somewhat below a normal relationship to billets. In fact, the spread is smaller than in any month since March, 1923, with the exception of October last year.

Iron Foundries Well Off

IN connection with the trend of the iron and steel industry the position of the iron and steel foundry trades in the Third Federal Reserve District, which includes Pennsylvania, is of interest. This condition is illustrated in Fig. 4.

Iron foundries are in a strong position with unfilled orders and shipments much larger than a year ago, while production is smaller. During July unfilled orders increased 5 per cent and were about 40 per cent greater than last year. Shipments increased 17 per cent. The increase in unfilled orders in spite of larger shipments is significant. Production is at a relatively low rate, the increase being only 2 per cent.

The steel foundry situation is not so strong, but appears to be in line for improvement. July was the first month since February in which the shipment curve ran above the production curve. This development was chiefly due to a sharp curtailment in production, which was forecast in an earlier issue. While July shipments decreased 4.8 per cent, the decrease last year was 16.7 per cent.

The Iron Age, September 17, 1925

Small Decrease in Steel Corporation's Unfilled Tonnage

Unfilled orders on the books of the United States Steel Corporation as of Aug. 31 aggregated 3,512,803 tons—a decrease of only 26,664 tons from those which remained unfilled on July 31. This decline is the smallest since the downward movement began. It compares with a decrease in March of 421,207 tons, which was the first decline since last July, with 416,996 tons in April, with 396,768 tons in May, with 339,342 tons in June and with 170,991 tons in July. A year ago the unfilled business was 3,289,577 tons, or 223,226 tons less than for Aug. 31, this year. Following is the unfilled tonnage as reported by months, beginning with January, 1923:

	1925	1924	1923
Jan. 31.....	5,037,323	4,798,429	6,910,776
Feb. 29.....	5,284,771	4,912,901	7,283,989
March 31.....	4,863,564	4,782,307	7,403,332
April 30.....	4,446,568	4,208,447	7,288,509
May 31.....	4,049,800	3,628,089	6,981,351
June 30.....	3,710,458	3,262,505	6,386,261
July 31.....	3,539,467	3,187,072	5,910,763
Aug. 31.....	3,512,803	3,289,577	5,414,663
Sept. 30.....		3,473,780	5,035,750
Oct. 31.....		3,525,270	4,672,825
Nov. 30.....		4,031,969	4,368,584
Dec. 31.....		4,616,676	4,445,339

The high record in unfilled orders was 12,183,083 tons, at the close of April, 1917. The lowest was 2,674,757 tons, on Dec. 31, 1910.

More Machinery Sold to South Africa—Market Growing Rapidly

WASHINGTON, Sept. 15.—Shipments of American machine equipment to South Africa have been showing a marked increase, those of last year amounting to a declared value of \$2,500,000, a 30 per cent gain over exports from the United States in 1923, the machinery division of the Department of Commerce points out. Mining machinery was the largest item.

South Africa shows consistent growth as a machinery market, and deserves the careful attention of American exporters of machine equipment, states the machinery division.

Even the total shipments of 1923 were nearly 80 per cent more than the value of United States shipments to South Africa during 1922. The machinery exports to British South Africa last year amounted to more than twice those of such pre-war years as 1910 and 1913 and to within about \$800,000 of such exports during the peak year of 1919.

The Aluminum Co. of America was the highest bidder for junking the wrecked airship Shenandoah. The material is an alloy of aluminum, copper and manganese and the Aluminum company's bid for the 50,000 lb. in the ship was reported to have been 20c. per lb.

ESTABLISHED 1855

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Long Range Price Trends

SOME five years ago the statistician of the Russell Sage Foundation carried back index numbers of commodity prices at wholesale to the year 1810, furnishing opportunity for study as to general price trends at long range, and particularly the effect of wars, as the influence of the war of 1812 was made discernible. Just recently the United States Bureau of Labor Statistics has compiled figures going back to 1801, represented in a diagram published in THE IRON AGE last week, page 683. This latest publication, by adding nine years, establishes more authoritatively the "pre-war prices" for the viewpoint of the 1812 war, and in the salient or important features agrees with the Russell Sage findings.

That prices rise in any important war and fall for years afterward has always been well recognized, but there is chance for misconception as to the length of time occupied by the purely post-war decline. The mistake made by some observers, who have said "prices fell for thirty years after the Civil War" is plain. The Civil War ended in 1865 and the lowest prices came in 1896 and 1897; but to relate the entire decline to the Civil War is absurd. From 1897 to a four-year period, 1910-1913, of practically stationary prices, there was an advance of 47 per cent. Why not call that a "pre-war advance"?

We can now construct a general statement as to the course of prices in a period of a century and a quarter, by segregating the influences of two of the wars, the 1812 war (and Napoleonic wars) and the Civil War, and of the United States being off the gold basis until the resumption of specie payments in 1879. Thus we can see a general downward trend in prices from 1801 to 1896 and then a sharp rise, one-half as great, up to 1910.

Little light is thrown on the matter by talking about "wages." It may be possible to construct a chart showing the course of wages over a quarter of a century, of carpenters, ditch diggers or printers; but the proportions of such work have varied so widely that wage rates have no continuous relation to total income of the people. Practically all digging was by hand a century ago, while now a few of the many steam shovels do more than all the

digging that is done by hand. A century ago nearly all housing space was supplied by carpenters, but now carpenters contribute but a very small percentage of the work in the sum total of our buildings. On the other hand, printing is a much larger proportion of the total work done than in 1801. And at best one only gets to arguing whether wages follow prices or prices follow wages.

The quantitative theory of money used to be overworked, but we cannot get away from it entirely, particularly when since the war we have had such colossal depreciation of European paper currencies. The relation between the total amount of funds, produced by currency and credit, and the total amount of goods and services is a factor.

As to commodities themselves, there are two ways in which they ought naturally to move, other things being equal. Commodities that have a production cost should decline, for when a commodity is worth producing at all men are going to improve the methods. Commodities whose supply is limited by nature should and will advance if the limitation increases relative to requirements, as for instance if the wheat growing area cannot increase with population, or if the richer iron ores are exhausted and leaner ores must be mined and smelted.

The "general course of prices" is merely a composite resulting from the operation of these important factors and various factors less important. Then if we have stable money, a downward trend will be produced by manufacturing influences and an upward trend by nature's influences. Consideration of "the future of prices" should be along these lines.

NOTABLE tribute to American metallurgists comes from a visiting British steel maker. Sir Arthur Balfour, in his address before Cleveland steel treaters and engineers, abstracted in THE IRON AGE last week, expressed his admiration for the remarkable control of steel-treating furnaces which he saw in the American plants he had visited. From his study of our photomicrographic apparatus and the results of its use he does not hesitate to declare that American workers "lead the world in this field." Though steel treating on its present scale is a development of recent years in this country, and

the new results and methods in photomicrography, high power magnification in particular, represent its latest advance, the tribute is well founded. It is fair to say, moreover, that the meeting and exhibition of steel treaters at Cleveland this week will further demonstrate that this message from Sheffield is more than the conventional compliment of an enthusiastic visitor.

Take Account of Economic Changes

IN examining economic statistics and making deductions therefrom, important alterations in conditions are often overlooked. Thus, in comparing railroad mileage and railroad traffic over the last period of ten years, we do not find the increases that might have been expected. This would lead to an erroneous opinion if it were not considered that there has been diversion of transportation by other methods. Pipe lines, electric transmission lines and automobiles are noteworthy examples, though these have resulted, perhaps, not so much in diversions as in absorptions of new business that might otherwise have been done by the railroads.

The automobile is, indeed, essentially a diverter. Its effect upon the short-haul business of the railroads has been pronounced, leading to the abandonment of many branch lines owing to their becoming unprofitable. It is reckoned by railroad economists that we can and ought to get along with 10 per cent less railroad mileage than we used ten years ago.

The effect of the pipe line has been different, it having been essentially a channel for new business. We have now about 65,000 miles of main and branch lines, and it is estimated that these do the work of 10,000 locomotives and 2,000,000 tank cars if the transportation had to be done on rails.

Similarly in respect to electric transmission lines. They supply the increasing requirements for power by conveying it from water falls, whereas otherwise coal would have to be carried in railroad cars and burned. This is a substitution rather than a diversion; but we may have the latter if we ever get to the economy of burning coal in large plants at the mines and carrying its energy over wires instead of carrying the coal in bulk over rails. The long distance electrical transmission of power is costly, but on the other hand the difference in the economy of large power plants vs. small ones is enormous.

These changes are aptly illuminated by statistics of the consumption of fuel. If the consumption of coals alone were divided by the population we should get strange quotients per person. Converting the consumption of fuel oil and hydroelectric power into terms of coal equivalent and then computing the quotient for all fuels, as has been done by Dr. W. R. Ingalls, the results look quite different, as appears in his table, giving the average for two triennial periods, as follows:

	1912-14 Lb. Per Person	1920-22 Lb. Per Person
Anthracite	1,737	1,380
Bituminous coal	8,946	8,136
Water power, coal equivalent.....	171	408
Fuel oil, coal equivalent	257	840
Total fuel	11,111	10,764

Even so, the consumption of all fuel appears to

have diminished in the latter of the two periods that are compared. That may be attributable to improved economy in use; may be to impairment in the scale of living on the whole; may be to both. These questions we are not now discussing. We merely point out how such changes in conditions must be taken into account when examining any single line of economic statistics.

Japan Taking Less of Our Steel

IN the years immediately following the war Japan was an outstanding purchaser of American products. That country's buying, added to Canada's, as frequently pointed out, has been the mainstay of our foreign trade. In the last year or two, however, there has been a marked decline in Japan's purchases in this market.

IN THE IRON AGE of Aug. 27 the arresting fact was brought out that Japan's purchases of nine leading finished steel products for seven months of this year ranked fourth in volume, being exceeded by those of Canada, Cuba and Argentina. This is the first year in which Japan has fallen below second place since the war. Significant also were data appearing in the same issue covering Japan's imports of iron and steel for seven years. These showed that in 1919 and 1920 67.5 and 65.3 per cent respectively of Japan's total imports was of American origin, while in 1924 the percentage was only 21.8, and had been but 15.4 per cent in 1923.

Recently in these columns it was pointed out that total shipments abroad of American steel for the last fiscal year were about 18 per cent under those for the fiscal year of 1924, with sharp declines registered in scrap, pig iron and rolled steel, the last named falling off more than 17 per cent. From what is said above it is manifest that the rapid decline of Japan's purchases in our markets is the main cause of our declining iron and steel exports since 1922. This is not due to lessened needs of Japan, for the 1924 imports there, partly for rehabilitation work, were the largest since the war. Heavier buying in other markets and in smaller part an increased domestic production of some products probably explain the present situation.

Timely Facts About Coke

AS we are in one of those recurrent periods in which the anthracite producing industry fails to function, the final statistics of coke in 1924 just issued by the Bureau of Mines are of particular interest. Coke is much the same as anthracite in some respects and is often spoken of as "an anthracite substitute."

The greatest use of coke is in the iron blast furnace, and it is to the point to bear in mind that coke is properly called a substitute for anthracite in this connection, for until 1870 more than half the pig iron in the United States was made with anthracite, and as late as 1883 about 19 per cent was made with straight anthracite and 18 per cent with anthracite and coke mixed, so that anthracite entered into the production of 37 per cent of all the pig iron made in that year. Reviewing the year in the annual statistical report, Mr. Swank said: "If the policy of maintaining high prices for anthracite coal is insisted upon the production of anthracite pig

iron must steadily decline." Today people are saying much the same thing regarding other uses of anthracite.

The final figures of coke production in 1924 are as follows:

Coke in 1924, Net Tons			
	By-product	Beehive	Total
Coal charged.....	49,061,339	15,914,310	64,975,649
Coke made.....	33,983,568	10,286,037	44,269,605
Yield, per cent.....	69.3	64.6	68.1
Ovens at beginning..	11,156	62,349	73,505
Ovens at end.....	11,413	60,432	71,845

It is always of interest to note the progress of by-product coking. In 1906 one-eighth of the coke was by-product. Six years later, in 1912, the proportion had doubled, being one-fourth. In 1919 by-product passed beehive, being more than one-half the total. Last year more than three-fourths of the coke was by-product.

Disposal of coke in 1924 is given as follows:

	Net Tons
Used by coke operator in blast furnace or affiliated works.....	25,597,970
Sold for furnace use to affiliated corporations.....	5,917,060
Merchant sales of furnace coke.....	4,948,416
Sold for foundry use.....	2,917,801
Sold for domestic use.....	2,952,657
Sold for industrial and other use.....	1,816,221
Screenings and breeze sold.....	568,227

The sum of the first three items above is 36,463,446 tons. Blast furnaces reported to the American Iron and Steel Institute that they used 34,303,060 tons. The difference is 2,160,386 tons, which probably represents in small part the use of furnace coke by affiliated interests for other than blast furnace purposes, and in large part the use by customers of merchant ovens of "furnace coke" for other than iron blast furnace use, including non-ferrous smelting.

The amount of coke assigned to foundry use is very large, 2,917,801 tons, considering that the production of pig iron in foundry and ferrosilicon, malleable and forge grades totaled only 6,852,243

tons. Even with all allowance for scrap, this would indicate a very low melting ratio, whereas 8 to 1 is often mentioned in the trade. Thus the importance of foundry coke consumption outside the iron foundry is made apparent.

ALL the work done in the small experimental blast furnace in Minnesota under the Bureau of Mines now seems fully justified. Publication of the results on manganiferous iron ores appeared recently and they give promise of valuable conclusions. Charges of 100 per cent of such ores were run to test the feasibility of using them on a large scale. Pig iron was made varying from a few per cent up to 15 per cent in manganese. Fundamental information on blast furnace operation appears to have been secured from a large mass of data. To find that the large deposits of manganiferous iron ores can be economically reduced into high-grade manganese-bearing pig iron is more than recompense for all the cost of the Minnesota experiments, since demand for such pig iron is increasing, both for steel making and for iron foundry work.

RECENT history of the American Society for Testing Materials is a remarkable exhibition of growth. Five years ago the number of standards and tentative standards was about 250. At the annual convention in June last it was shown that this total had grown to 458—an increase of 83 per cent. In the same five years the membership has increased nearly 40 per cent, or from 2750 to 3780. With this marked expansion, new questions have come to the front which have challenged the best thought of a diversified membership. Such growth in numbers and prestige should make for the best solution of these problems and extend the society's influence well beyond the field of its earlier efforts.

CORRESPONDENCE

What Is Steel?

To the Editor: In your issue of Sept. 3 Dr. Sauveur reopens the vexing problem of constructing a brief but precise and comprehensive definition for steel.

Dr. Howe, in his monumental "Metallography of Steel and Cast Iron" devotes 24 pages to the classification and definition of all the ferrous alloys which have been produced commercially. His attempt to include all usages, past and present, American and foreign, results in a definition which is split into two parts and requires about 500 words to express.

The International Society for Testing Materials proposed a definition: "Steel is iron which, in a liquid state, is cast into a practically malleable mass, at least initially, within some range of temperature." As Dr. Sauveur points out, this includes ingot iron, a commercially pure iron made in an open-hearth furnace in considerable quantities. Ingot iron is not steel, because it will not harden.

Dictionary definitions are even more unsatisfactory. For instance, Webster's New International Dictionary, 1924 edition, says: "Steel is a variety of iron intermediate between cast iron and wrought iron, very tough and, when tempered, hard and elastic." A brief consideration will show that steel is intermediate only

in carbon content and not in any of the ordinarily determined physical properties.

Dr. John A. Mathews about three years ago presented a definition which should be given more weight than either of the above. It is the opinion of a metallurgist seasoned with years of investigation and contact with the production of the alloy. He says: "Steel of commerce is that form of iron which has been produced by melting to yield a finished product which is malleable." It will be noted that *malleability* is to him a leading criterion. Unfortunately, his definition would include ingot iron. It excludes blister steel, but this is perhaps less important, in view of the vanishing amount of it being made nowadays.

In view of this situation, I published in *Chemical and Metallurgical Engineering* for Nov. 8, 1922, an analysis which led to the definition, "Steel is a malleable alloy of iron and iron carbide." The train of thought led from the fact that steel is always associated with the ability to be hardened and toughened by appropriate treatment. Ancient steels were able to take a keen and enduring edge, and hence were prized for weapons and cutting tools. Modern steels are stronger than iron, and hence are built into all manner of machines and structures. What would be more natural, then, that steels should be defined in the light of recent investigations into the cause of this hardening and strengthening?

Howard Scott, of the Bureau of Standards, pointed out that this definition neatly excluded ingot irons, because the small amount of carbon is entirely dissolved in the iron. Pearlite does not appear under the micro-

scope, nor does the characteristic A₁ thermal arrest appear until carbon surpasses 0.035 per cent.

Obviously, blister steel is an alloy of iron and iron carbide. White cast iron, an alloy of iron and iron carbide is excluded, because it is not malleable. Malleable cast iron is excluded because it is an alloy of iron and carbon.

My definition has been criticised on the basis that it includes merchant bar—a product made from a fagot containing scrap wrought iron and low carbon steel. Merchant bar would show masses of iron: iron-carbide alloy, but it is essentially a conglomerate, and not a uniform alloy.

A more weighty objection is that my definition would tend to exclude austenitic steels, like high manganese steel which shows no pearlite under the microscope. It may be replied that this steel is like a hardened carbon steel; it is in a state of unstable equilibrium, and by appropriate treatment resolves itself into an ultra-microscopic alloy of ferrite and cementite.

I take this opportunity of resurrecting this definition, because I believe it fits our modern information on the true nature of steel rather better than Dr. Sauvour's proposal that "Steel is a malleable alloy of iron and carbon which generally contains substantial quantities of manganese." His definition would include malleable cast iron. Furthermore, iron carbide, rather than carbon, is the essential constituent of steel.

E. E. THUM,

Union Carbide & Carbon Corporation.
New York, Sept. 10.

The Shoenberger Name in the Iron Trade of Chicago and Duluth

To the Editor:—Your excellent article on page 141 in the issue of July 16, concerning the Juniata Iron Works of Shoenberger & Co. is correct in every essential particular in its historical references. I was the last of the Shoenberger name to enter the company's office at Pittsburgh. My cousins ahead of me in the office at Pittsburgh were William Hamilton Shoenberger, Peter Shoenberger, Thomas Blair and General Charles L. Fitzhugh. I consulted my uncle, John H. Shoenberger, as to my prospects and he said he thought I would be happier and get ahead faster if I started in Chicago. He gave me the money to start in business there. I came to the Chicago district in 1868 and built the Chicago Steam Boiler & Engine Works, also the Shoenberger Iron Foundry.

In 1870 I was induced by Jay Cooke, the banker, to build cars at Duluth, Minn. He gave me large contracts for the Northern Pacific Railroad and iron for the docks at Duluth. Jay Cooke, E. W. Clark, also a Philadelphia banker, John H. and George K. Shoenberger of Pittsburgh and myself built the first iron blast furnace at Duluth.

My great grandfather, George Shoenberger, secured the land and built the Huntingdon, Pa., furnace in 1791. This furnace was blown in in 1795, as you have stated. My father, Edwin F. Shoenberger, one of the brothers, was an early member of the firm of Shoenberger & Co., but was taken out by his father to run the Juniata Forge & Rolling Mill.

I was with McCall's Division, Eighth Pennsylvania Reserves, in the Civil War. The regiment was mustered in at Camp Curtin, Harrisburg, Pa., by our late lamented friend, Capt. Robert W. Hunt, the eminent engineer.

I am proud of being the oldest living depositor in the First National Bank of Chicago, having gone to it when the Hon. Lyman J. Gage was made cashier some 57 years ago. In all that time I never had any paper that was not cared for. The bank speaks of my record as a borrower and depositor as unparalleled. Until within a few years I helped in the building up of Chicago, being in the iron business steadily from the time I came West. I was an early buyer from Joseph T. Ryerson.

For many years I have been a reader of THE IRON AGE and congratulate you on its present condition.

GEORGE K. SHOENBERGER.

Winnetka, Ill., Aug. 25.

SUCCEEDS R. V. LINDABURY

Ex-Governor Miller Steel Corporation Counsel—
Myron C. Taylor Also a Director

Following a meeting of the board of directors of the United States Steel Corporation, held in New York Tuesday afternoon, Sept. 15, Chairman Gary made the following statement:

"We held a special meeting of the board of directors today. We amended the by-laws, making the number of the Finance Committee eight instead of seven. There were two vacancies on the board of directors, one on account of the death of Mr. Lindabury and one that previously existed. We elected to fill these places Gov. Nathan L. Miller and Myron C. Taylor, and we also elected these two members of the Finance Committee, making the total number eight. Governor Miller was also elected general counsel."

Ex-Governor Miller, previous to his term at Albany in 1921-22, had been an important figure in legal practice in New York for six years following his resignation as associate judge of the New York Court of Appeals in 1915. From 1903 to 1913 he had been on the bench, first as a Justice of the Supreme Court and later as an associate justice of appellate courts. Myron C. Taylor is a lawyer, director of the First National Bank of New York, chairman of the board of the American Cotton Fabric Corporation, Essex Cotton Mills, Passaic Cotton Mills and other textile companies, president of Myron Taylor & Co., Inc., director of the Lehigh & Wilkes-Barre Coal Co., also a director of the Santa Fe and Erie railroads. He was graduated in law from Cornell University in 1894.

British Iron and Steel Output Lower

LONDON, ENGLAND, Sept. 15 (By Cable).—The pig iron output in August was 444,500 gross tons, compared with 492,700 tons in July and 510,300 tons in June. August steel production at 477,100 tons, shows a heavy drop from July, with its 590,400 tons, and June, with 585,400 tons. The pig iron production was the lowest since the 430,300 tons of September, 1922. The steel output was the lowest since the 473,100 tons of July, 1922.

Comparative production figures for the British steel industry in gross tons per month are as follows:

	Pig Iron	Steel Ingots and Castings
1913, per month.....	855,000	639,000
1920, per month.....	669,500	755,600
1921, per month.....	217,600	302,100
1922, per month.....	408,300	486,000
1923, per month.....	619,800	707,400
1924, per month.....	609,900	685,100
January, 1925.....	569,400	605,100
February.....	534,100	646,400
March.....	607,900	684,700
April.....	569,800	597,600
May.....	568,000	651,600
June.....	510,300	585,400
July.....	492,700	590,400
August.....	444,500	477,100

Railroad Car Company to Build Buses

The American Car & Foundry Co., which as announced in THE IRON AGE of Sept. 10 has purchased the plant of the Hall-Scott Motor Car Co., Berkeley, Cal., will engage in the manufacture of motor buses. The Hall-Scott plant was acquired because of the reputation it has achieved in the manufacture of bus engines. The fabrication of the buses will be done in one or more of the plants of the American Car & Foundry Company.

In a statement given out at the New York office of the American Car & Foundry Co., 165 Broadway, denial is made of rumors that the company has acquired other plants to which the Hall-Scott company had been supplying engines.

STEEL TREATERS MEET

Large Attendance at Cleveland—Machine Tool Exhibit Comprehensive—Automotive Engineers Cooperate

CLEVELAND, Sept. 15.—Fully up to, if not exceeding, the most optimistic predictions is the record of the first two days of the seventh annual convention and exhibition of the American Society for Steel Treating. Large delegations from the 29 local chapters, as well as most of the leading metallurgists of the country, are here. Four technical sessions attended by several hundred members and guests have already been held, with tool steel, fatigue phenomena, graphitization and other subjects discussed. The first session ever held by the society on steel making processes was a feature this morning. It was attended by nearly 500 who listened to papers on the acid and basic open-hearth and electric furnace processes. Some 35 papers are included in the technical program for the sessions, lasting five days.

Registration the first day was 1800 members and guests, with 3000 the estimate for the first two days.

Exceptional Display of Machinery

Impressive in its magnitude and scope, and surpassing anything of its kind ever held before, is the national steel and machine tool exhibition at the public auditorium. The machine tool section is a feature, where over 90 exhibitors, representing most of the leading makers, have their products under operating conditions. Many new designs and improvements are on view. Another feature is the unusually large number of steel companies, particularly those making alloy steels, which have comprehensive displays. The aisles last evening were crowded, so large was the attendance.

The officers for next year, who are to be elected by letter ballot in December, have been selected by the nominating committee as follows: For president, R. M. Bird, Philadelphia; for vice-president, J. Fletcher Harper, research engineer Allis Chalmers Mfg. Co., Milwaukee; for treasurer, Dr. Zay Jeffries, head of the research bureau, Aluminum Company of America, Cleveland. The two new directors nominated were H. J. Bornstein, Deere & Co., Moline, Ill., and R. G. Guthrie, metallurgist People's Gas, Light & Coke Co., Chicago.

Society of Automotive Engineers

The annual meeting of the production section of the Society of Automotive Engineers is the center of interest at the Hotel Winton. Three days are devoted to technical sessions, papers having been delivered already on sheet steel, training of foremen and gear production and machine tools. The registration is between 200 and 300. The automotive engineers are joining with the steel treaters in general activities.

A complete account of the papers and discussions of the exhibition and entertainment features will be published in THE IRON AGE Sept. 24.

Australian Iron and Steel Tariff Raised

Higher Australian import duties on iron and steel items as well as most types of machinery were made effective Sept. 3, according to an announcement by Kenneth J. G. Smith, New York, representing Australian customs in the United States. The rate on iron and steel plates and sheets, including corrugated galvanized sheets, was raised from 30 to 60s. per gross ton. On wrought iron and malleable cast iron fittings for pipes and cast iron fittings for pipes of not more than 2 in. internal diameter, the new duty is 50 per cent ad valorem, instead of 40. Coal cutting machines, however, are now admitted free, whereas formerly they carried a 10 per cent duty. Other types of equipment have higher duties, as a rule. Motive power machinery

and appliances, except electric, as well as all machinery not elsewhere indicated, have been subjected to a duty of 60 per cent, as against 40 per cent. Other items affected include the following: Locomotives—old rate 40 per cent, new rate 55 per cent; bolts, nuts, rivets and metal washers, screws with nuts or for use with nuts, engineer's set screws—old rate 40 to 45 per cent, new rate 50 per cent; wood and sash screws and attachments, screw hooks, eyes and rings—old rate 10 per cent, new rate 40 per cent. Automobiles now carry a duty of 12½ per cent, unassembled, and 17½ per cent, assembled, as against the former rates of 10 and 12½ per cent.

Well Known Engineers on Air Defense Board

WASHINGTON, Sept. 14.—President Coolidge has appointed a board to take up a study of proper air defense for the United States and to thresh out thoroughly the conflicting claims on this much discussed subject. One member is Dr. William F. Durand, Los Angeles, president American Society of Mechanical Engineers, and lately at the head of the mechanical engineering department of Leland Stanford, Jr., University. He formerly was chairman of the National Advisory Committee for Aeronautics and during the war was stationed in France in connection with aircraft design and use.

Howard C. Coffin, vice-president and consulting engineer of the Hudson Motor Car Co., another member, was chairman of the Aircraft Production Board during the war. Rear Admiral Frank F. Fletcher, retired, long noted for his progressive attitude toward inventions relating to the fighting arm; Major General James G. Harbord; Senator Hiram Bingham, Connecticut; Representatives Carl Vinson, Georgia, and James S. Parker, New York; Dwight W. Morrow of J. P. Morgan & Co., and Judge Arthur C. Denison, Grand Rapids, Mich., complete the list.

Foundry Cost Subjects at Syracuse Meeting

The committee on foundry costs of the American Foundrymen's Association has planned the holding of a discussion session on this topic for the Syracuse meeting of the association to be held on the afternoon of Tuesday, Oct. 6. A. E. Hageboeck, chairman of the committee, will explain the proposed activities of the committee which plans to devote its efforts largely to the cast iron field, as the malleable and steel foundries have already developed cost accounting to meet their specialized needs. J. H. Runge, Cleveland, will talk on "Practical Cost Accounting," giving some of his experiences in meeting the problems of foundries in handling cost work. W. T. Barrett of the Metropolitan Life Insurance Co. will talk on "Foundry Management and the Effect on Foundry Costs." In addition, a general discussion by foundry managers will be held.

Gain in Cold Rolled Strip Exports

WASHINGTON, Sept. 15.—Shipments of cold rolled strip steel from the United States to other countries in the first seven months of this year averaged higher than exports of that commodity last year, according to an analysis of cold rolled strip steel exports released today by the Iron and Steel Division, Department of Commerce.

Canada continues to be the heaviest buyer, its purchases for the seven months ended July 31, this year, totaling 5870 tons. In 1924 Canada took 7701 tons, and the United Kingdom 312 tons. In the first seven months of this year the United States exports to the United Kingdom amounted to 162 tons. Last year exports to Mexico totaled 348 tons, while in the first seven months this year, that country took only 49 tons. Exports to all countries from Jan. 1 to July 31, 1925, aggregated 6396 tons, as compared with 9372 tons for the entire year 1924.

SOUTHERN STEEL RATE CUT

Birmingham and Other Points Affected by Commission Decision

WASHINGTON, Sept. 15.—Despite protests from a number of iron and steel producers at Pittsburgh and points north of and on the Ohio River, a decision of the Interstate Commerce Commission is likely to result in a 7c. reduction in freight rates on iron and steel articles from Birmingham and other Southern steel-producing points to Memphis, Tenn. This would enable Birmingham and other steel producers in the South to meet competition of Ohio and Mississippi River barge shipments of steel to Memphis territory and intermediate points.

The commission has upheld the reasonableness of these rates as published by the St. Louis-San Francisco, Southern and other roads, but has found undue prejudice as to St. Louis and Louisville, with the result that it has ordered the rates canceled without prejudice to new ones being established along the lines laid down. Thus the present rate of 32c. per 100 lb. from Birmingham to Memphis would be reduced to 25c., and rates from other intermediate points would be lowered accordingly.

The rates, which were scheduled to go into effect last May, have been held up by suspension order pending further hearing. Steel producers at Wheeling, W. Va., Middletown and Youngstown, Ohio, Cleveland, Chicago, Pittsburgh and other points had protested.

No assertion was made in the protests that the rates were unreasonably low, but it was held that similar reductions also should be made in the all-rail rates from the Northern steel producing points to prevent undue prejudice in favor of the Southern producers.

Outlining the events leading up to the new rates from the Southern points to Memphis, the report of the commission states:

They (the rates) were published following the establishment of a rate from Pittsburgh (and other points) to Memphis of 40.7c. by way of the inland waterways to Louisville and the Louisville & Nashville beyond. The proposed reductions also followed information received by respondents that iron and steel articles were moving from Pittsburgh to Memphis by way of barges on the Ohio and Mississippi Rivers at a transportation cost not exceeding 25c. per 100 lb.

It is stated that while iron and steel articles have moved by barge from Pittsburgh to Memphis since 1921, the water

competition on the Ohio and Mississippi Rivers was not appreciably felt by the Birmingham producers prior to July 1, 1923, on which date the rate from Birmingham to Memphis was increased (in compliance with a fourth section order affecting Southeastern territory) from 16 to 32c. Immediately after this increase the Birmingham producers began to complain of their inability to reach the Memphis market and of the extreme competition which they were meeting by reason of the movement of iron and steel articles to Memphis by water from Pittsburgh.

The respondents state that an investigation made by them indicated that iron and steel articles were being shipped in barges down the Ohio and Mississippi Rivers from Pittsburgh to Memphis at a cost of about 25c. per 100 lb., as heretofore stated.

It was contended by the carriers that if Birmingham is to sell its steel products into Memphis territory, it should have a lower rate to meet the river barge competition from Pittsburgh and other Northern points, despite the fact that the 32c. rate at present is not considered an unreasonably high one. It was urged by the carriers that there was no necessity for reducing the Chicago or Pittsburgh rates, inasmuch as those points have been enjoying a lower percentage of the Birmingham rate to Memphis than was the case in August, 1920, when the general increases in freight rates were ordered.

The protesting steel companies and others at Pittsburgh and Ohio River territory points took the position that only the all-rail rates should be considered by the respondents, and not any natural advantage, such as being able to ship by water. They insisted that if water transportation should be considered, the actual cost of a ton of moving iron and steel from Pittsburgh to Memphis by barge is greatly in excess of 25c. per 100 lb. Such a cost would include loading into the cars at plants, switching from plants to docks, loading from cars to barges, insurance, towing to Memphis, unloading and placing in warehouses. Respondents, on the other hand, argued that some of the larger producers at Pittsburgh are shipping their products to Memphis in their own barges, and that this presumably lessens the cost of river transportation as compared with shipping in independent barges. The following table is illustrative of the proposed changes:

To Memphis, Tenn., From	Distance Miles	Present Rate	Proposed Rate
Birmingham, Ala.	252	32	25
Knoxville, Tenn.	421	37	30
Atlanta, Ga.	418	38	31
Macon, Ga.	506	42	35
Savannah, Ga.	685	50	43

LOW PRICED TATA PIG IRON

Eastern Pennsylvania Interests Cite Testimony on Subsidy by Indian Government

Atlantic Coast pig iron producers, who have been protesting to the United States Government against imports of Indian pig iron on the ground that such imports constitute "dumping" within the meaning of our tariff laws, will probably make further representations to the officials at Washington because of information that the Indian pig iron and steel industry is being subsidized by the Indian Government.

In a cablegram to the Department of Commerce, Assistant Trade Commissioner Donald Renshaw, stationed at Bombay, India, advises that the Indian Tariff Board recommends that the Indian Government continue the bounty to the steel industry, but at the reduced rate of 18 rupees (about \$6.60) on each ton.

The Trade and Engineering Supplement of the *Times*, London, England, of Aug. 22, comments as follows on the situation in the Indian pig iron and steel industry:

In the session of the Indian Legislature inaugurated by Lord Reading on Thursday, consideration will be given to Government proposals regarding a series of reports by the Tariff Board in respect to applications for the protection of various industries. The outstanding question on which the board has been taking evidence this summer is whether there should be still further protection for the steel industry carried on by the Tata Iron & Steel Co. at Jamshedpur.

The Tata company has asked for still further assistance on the ground that several unforeseen factors have rendered the existing protection inadequate. It sees no sign of any rise in prices either in Great Britain or on the Continent; "although there is little doubt that in almost every country steel is being sold for export at a price below the cost of manufacture in order to keep the works going, there seems to be little expectation of a rise in price within the next two years." They consider that indications point to a further rise in rupee exchange, "the effect of which will be to lower prices still further." It was therefore urged that "the least possible help that can insure the adequate protection of the industry" is the maintenance of the bounty of Rs. 20 per ton of ingot steel until the expiry of the Steel Protection Act, in March, 1927, and that the annual bounty should be not less than Rs. 60 lakhs (£450,000).

The application has met with strong opposition from various interests concerned. The Bombay Iron Merchants' Association, in a communication to the Tariff Board, states that when the first inquiry was being conducted by the board the iron merchants did not realize the grave danger to their business and the heavy burden on consumers involved in the imposition of the protective duties. The Bengal Iron Co. has submitted to the board the complaint that, owing to the protection received, the Tata company is able to sell its pig iron at lower rates than other Indian producers.

The witness for the Bengal Iron Co. quoted a specific instance in which Tata has sold 30,000 tons of pig iron to Japan at Rs. 34 per ton, while the ruling price was Rs. 62 per ton and the cost could not have been less than Rs. 38 per ton. The other Indian producers, not being manufacturers of steel, could not compete at these prices; and his own company had been compelled to close down a part of its plant and to discharge 5,500 employees.

UNFAIR PRACTICE DENIED

Wickwire-Spencer Steel Corporation Argues Against Federal Trade Commission Charge

WASHINGTON, Sept. 15.—A complaint by the Federal Trade Commission last March against the Wickwire-Spencer Steel Corporation, maker of screen wire cloth, charged violation of the Clayton Act in the alleged acquisition of stock of the American Wire Fabrics Co., of Chicago, through an organization known as the American Wire Fabrics Corporation. The Wickwire-Spencer Co. today denies that it has acquired all of this stock. It avers that the Wickwire-Spencer company obtained merely an equitable interest in the stock of the American Wire Fabrics Corporation. It is added that the capital stock of the American Wire Fabrics Corporation was issued to the Columbia Trust Co. as trustee, under a purchase money mortgage securing \$1,775,000, principal amount of 10-year convertible gold notes of the Wickwire-Spencer Steel Corporation issued in part payment for the stock. This equitable interest, it is declared, is subject to the prior payment in full of all the notes and the purchase was to obtain an income to meet losses which were sustained by the Wickwire-Spencer company. It is alleged that if this stock had not been acquired the Wickwire-Spencer Co. would have become insolvent in 1922 when the equity purchase was said to have been made. The primary owners of the American Wire Fabrics Corporation which took over the American Wire Fabrics Co. are bondholders and holders of the notes, it is declared. The Wickwire-Spencer company denies that this purchase lessened competition and also denies that it was engaged in business at the time the complaint was issued. On Feb. 19, 1925, it is stated, the business was transferred to the Wickwire-Spencer Steel Co., a distinct corporation not connected with the company against which the complaint was made. It is stated that in 1924 the Wickwire-Spencer Steel Corporation was in financial difficulties and lost \$1,301,000.

More About the Sanitary Can

In the article "Guarding the World's Food Supply," which appeared in THE IRON AGE, Aug. 6, mention was made of the fact that the original of the modern sanitary type of can for food preservation was the invention of Max Ams. It should also have been noted that the firm of Max Ams, a partnership consisting of Max Ams and his son, Charles M. Ams, first engaged in the canning of foods and proved the value of the invention by applying it with success to its own business. By 1902 the merit of the new type of container had been accepted to such an extent that the Max Ams Machine Co. was incorporated to take over the business of the former company so far as the sanitary can was concerned. Julius Brenzinger was the production executive under whose guidance new machines for the production of sanitary containers progressed at the first plant in Mount Vernon and later at the works at Bridgeport, Conn. Charles M. Ams was one of the three founders of the original company engaged solely in the manufacture of the new container—the Sanitary Can Co., Fairport, N. Y. William Y. Bogle and George W. Cobb, now sales manager of the American Can Co., were the other incorporators.

Proposed Granite City Blast Furnace

Plans for a second blast furnace at the Granite City, Ill., plant of the St. Louis Coke & Iron Co., are still indefinite, according to a statement by W. G. Maguire, general manager to the receiver. Recent reports of the award of the steel contract for the stack are stated to be without foundation.

E. Arthur Tutein, Inc., New York, Boston and Philadelphia, has been appointed American agent for the Compagnie Belge des Mines, Minerais et Metaux, of Antwerp, Belgium, in the sale of manganese and chrome ores. The Belgian company is an important factor in Indian manganese ore.

EXPORT INQUIRY LIGHT

Japan Wants Tin Plate But British Price Is Low —American Importers Quote on Rails, Hoops and Shapes

NEW YORK, Sept. 15.—With the exception of requests from Japan for prices on canners' quality of tin plate, the Far Eastern market is quiet. The South Manchuria Railway is in the market for a small lot of boiler plates and bars, but apparently has covered its rail requirements for the present. While some of the Japanese tin plate inquiry may result in business for American mills, the price of British sellers is reported to be about \$5.40 per base box, c.i.f. Japan, compared with an American c.i.f. price of about \$5.55 per base box. About the same difference in price between American and British mills prevails on light gage black sheets. Chinese inquiries include wire shorts and second hand material, particularly tin plate waste waste, but prospective purchasers are not inclined to meet the quotations made by American sellers and in the case of waste waste there is but little material available at present.

Importers Still Active

American importers are active and a moderately large volume of business is reported in structural material with a fairly large tonnage of rails under consideration. One of the rail inquiries calls for 10,000 tons of 85-lb. sections and another for 3000 tons of 90-lb. sections. An importer in New York recently closed about 50 tons of 16-lb. sections with a coal company in New Mexico and is figuring on a tonnage of girder rails for a city in the East. The rail inquiry from the International Great Northern Railroad covering about 1500 tons of 90-lb. sections, on which importers submitted bids, is reported to have been placed with a leading American independent.

Hoops and Cold-Drawn Bars

Products other than structural steel and rails are occasionally receiving the attention of importers. One representative of European mills in New York recently closed a sizable tonnage of hoops and another importer is offering cold-drawn bars. Although mail order houses are interested in the purchase of German barbed wire their specification of small spools, as a rule, is not acceptable to the European mills.

While there has been little recent activity in the importation of European pig iron, it is reported that about 6000 tons of British iron has been shipped from a British port to Philadelphia, consigned to a cast iron pipe foundry. It is understood to be part of a larger tonnage recently purchased in England.

Commodity Specifications Classified in a Book of 385 Pages

Already on the press, the National Directory of Commodity Specifications, which is being issued by the Bureau of Standards, Department of Commerce, will be ready for distribution about Sept. 21. It contains information regarding the best known specifications for more than 6000 commodities, telling not only what specifications are in general use but also by whom they were prepared and where copies can be obtained. The book indexes for ready finding about 27,000 specifications prepared by the Federal Specification Board and the separate departments of the Federal Government, by State and city purchasing agents, technical societies and trade associations. About 3300 specifications are included dealing with non-metallic minerals, 6400 concerning metallic ores, metals and their manufactures, and 2900 covering machinery and vehicles. The book is printed on standard catalog size sheets in reference-book style; the type is small but legible and the material has been condensed into 385 pages. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, and the price is \$1.25.

FABRICATED STEEL

Inquiries Run Fairly High and a Great Deal of Work May Be Placed Soon

Inquiries for structural steel in the past week have been fairly large, about 38,000 tons, and indications point to a great many lettings within the next few weeks. The work placed under contract, as reported to THE IRON AGE was slightly under 25,000 tons, of which the largest project was the Pennsylvania Railroad office building, Philadelphia, 5000 tons, the first unit of terminal improvements to cost \$60,000,000. A Toledo hotel, 3500 tons, is next in size. Bridges for the New York Central Railroad require 6500 tons and a bridge at Pittsburgh calls for 6700 tons. The week's awards follow:

Pennsylvania Railroad, office building in Philadelphia, 5000 tons, to McClintic-Marshall Co.

St. Regis Hotel, New York, addition, 200 tons, to Levering & Garrigues.

Park West Hospital, 163 West Seventy-sixth Street, New York, 200 tons, to Hay Foundry & Iron Works.

Charles E. Mitchell, residence, 934 Fifth Avenue, 200 tons to Hay Foundry & Iron Works.

Five County Realty Co., New York, building at 356 West Thirty-ninth Street, 1600 tons, to McClintic-Marshall Co.

Columbia-Presbyterian Hospital, New York, power plant, 500 tons, to Post & McCord.

Apartment building, Ninety-third Street and Fifth Avenue, New York, 1200 tons, to Paterson Bridge Works.

Wabash Railway Co., repair shops, 900 tons, to Mississippi Valley Bridge Co.

Atlantic Coast Line, building, 100 tons, to American Bridge Co.

Senior high school, Philadelphia, 700 tons, to New York Shipbuilding Corporation.

Ford Motor Co., assembly plant at Somerville, Mass., 2300 tons, to McClintic-Marshall Co.

Bangor & Aroostook Railroad, warehouse, 100 tons, to McClintic-Marshall Co.

Bridge, Boston, 175 tons, to New England Structural Co.

Michigan Steel Corporation, Detroit, storage building, 275 tons, to Jones & Laughlin Steel Corporation.

Commodore Perry Hotel, Toledo, 3500 tons, to American Bridge Co.

Black Rock market building, 175 tons, Buffalo, to Kellogg Structural Steel Co.

School, Franklinville, N. Y., 100 tons, to Kellogg Structural Steel Co.

Chesapeake & Ohio Railroad, boiler shops at Huntington, W. Va., 950 tons, to General Iron Works.

U. S. Engineers' Office, Louisville, 750 tons of steel sheet piling for Ohio River dam No. 52, to Bethlehem Steel Co.

South Side Malleable Casting Co., Milwaukee, addition, 130 tons, to Milwaukee Bridge Co.

Oilgear Machinery Co., Milwaukee, addition, 100 tons, to Worden-Allen Co.

Texas & Pacific Railway Co., Dallas, Tex., bridge, 125 tons, to American Bridge Co.

Union Pacific, train shed for Oregon short line at Salt Lake City, Utah, 180 tons, to Structural Steel & Foundry Co., Salt Lake City.

Puyallup River Bridge on State road No. 1, near Tacoma, Wash., 1783 tons, to Wallace Equipment Co.

Southern California Edison Co., power plant, Long Beach, 1200 tons, to Llewellyn Iron Works.

Johns-Manville Co., four one-story buildings, Pittsburg, Cal., 400 tons, to American Bridge Co.

Apartment building, San Diego, Cal., 100 tons, to Moore Dry Dock Co.

Santa Fe Railroad, San Bernardino, Cal., machine shop, 100 tons, to Union Iron Works.

Bridge, Umatilla, Ore., 100 tons, to Virginia Bridge & Iron Works.

Eugene Water Board, Eugene, Ore., McKenzie River water supply system, 1500 tons, to Coast Culvert & Flume Co.

Standard Oil Co. of California, San Francisco, 150 tons, to unnamed fabricator.

Sewage treatment plant, Sanitary District, Niles Center, Ill., 280 tons, to Midland Structural Steel Co.

Seeger Refrigerator Co., St. Paul, Minn., 110 tons, to St. Paul Foundry Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Harding Construction Co., New York, loft building, 260 West Thirty-ninth Street, 1700 tons.

York Construction Co., building at Tremont and Bailey Avenues, New York, 200 tons.

New York Telephone Co., Thayer Street exchange, 900 tons.

New York Central Railroad, bridges, 6500 tons.

City of New York, Brooklyn approach to Manhattan Bridge, 2000 tons.

Chesapeake & Ohio Railroad, bridges, 1400 tons.

Creedmoor, L. I., New York State Hospital, 2000 tons.

New York-New Jersey vehicular tunnel, contract No. 13, 2000 tons.

City of New York, Fort Washington & Broadway subway, 2500 tons.

High school, New Bedford, Mass., 300 tons.

Winthrop Hotel, Boston, 1150 tons.

Business Administration School, Harvard College, Cambridge, Mass., 11 buildings, 1500 tons.

Dade County Court House, Miami, Fla., 2200 tons.

New Point bridge, Pittsburgh, 6700 tons, bids to be opened Sept. 30.

Chicago, Milwaukee & St. Paul, 150 ft. span, 200 tons.

Tayco Street bridge, Neenah, Wis., tonnage undetermined, plans ordered Sept. 4 from Straus Bascule Bridge Co., Chicago.

Sutherland, Ore., 7-mile pipe line, 500 tons.

Office building, Sixteenth Street and Telegraph Avenue, Oakland Cal., 1300 tons.

Bank of Italy, Fresno, Cal., 400 tons.

Pan-American Petroleum & Transport Co., tank work at San Pedro, Cal., 750 tons, instead of 100 as previously reported.

State Armory building, roof, Fourteenth and Howard Streets, San Francisco, 450 tons.

National Science Building, Buffalo, 1000 tons.

Taylor Allderdice high school, Pittsburgh, 2000 tons.

RAILROAD EQUIPMENT

Inquiries for 4260 Freight Cars, 32 Locomotives and 40 Passenger Coaches

In addition to the purchase of 1000 70-ton gondolas by the New York Central, the railroad equipment market has been enlivened by inquiries for a total of 4260 freight cars, 32 locomotives and 40 passenger coaches. The St. Louis-San Francisco wants 3000 box cars and the Louisville & Nashville 1250 box cars, gondolas and flat cars, besides the locomotives and passenger coaches mentioned. The principal items follow:

The New York Central has ordered 1000 70-ton steel hopper cars, 500 from Pressed Steel Car Co. and 500 from the Standard Steel Car Co.

The St. Louis-San Francisco Railroad has issued an inquiry for prices on 3000 composite box cars.

The Louisville & Nashville is asking for prices on 32 locomotives and 1250 freight cars, of which 500 are to be box cars, 500 gondolas, 250 flat cars and 40 passenger cars.

The Kansas City, Mexico & Orient Railroad has placed an order for 50 hopper cars with the Mount Vernon Car Mfg. Co.

The Delaware, Lackawanna & Western opened bids Tuesday on 15 passenger coaches.

The order of the Georgia, Florida & Alabama Railroad for 250 box cars, announced last week as placed with the General American Car Co., has been increased to about 280 cars.

The Baldwin Locomotive Works is in the market for 10 flat cars.

The Gypsum Fireproofing Co. has ordered 20 mine cars from the American Car & Foundry Co.

The General Fuel Corporation has ordered 50 mine cars from the American Car & Foundry Co.

E. I. duPont de Nemours & Co. have ordered 22 tank cars from the General American Tank Car Corporation.

Iron and Steel Markets

MORE CAR INQUIRY

Better Outlook for Railroad Buying —Increased Demand for Bars

Significant Advance of 50 Cents in Pig Iron—High Rate of Steel Output

Signs of better railroad buying, an increased demand for the heavier finished steel products, particularly bars, for which prices show more strength, and an advance of 50c. in Valley and Chicago pig iron again put the balance of the week's developments in iron and steel on the side of gain. The reported increase of 11 per cent in August steel ingot production and the negligible loss of 26,000 tons in Steel Corporation orders helped also as evidence of August betterment.

Steel ingot output last month was a surprise to producers, as it showed a 76 per cent rate for the entire industry (counting capacity at 54,000,000 tons a year), whereas weekly estimates had pointed to a 72 per cent average.

In the first half of September, apart from the Labor Day loss, production has increased somewhat, and the movement may go a little farther, as two blast furnaces are likely to be added to the Steel Corporation's active list in the Pittsburgh district.

If the last four months of the year only maintain the August rate, 1925 will come close to a 43,000,000-ton ingot output, which would be but half a million tons behind the remarkable record of 1923 and exceed 1924 by 6,200,000 tons.

Prospects of railroad equipment buying are bettered by inquiries for 3000 box cars from the St. Louis-San Francisco and 1250 freight cars and 32 locomotives from the Louisville & Nashville. The New York Central has ordered 1000 70-ton gondolas. Over 75,000 tons of steel is represented in all the pending car business.

The Chicago & Northwestern has just added 25,000 tons to its recent rail order, making 35,000 tons in all. Of the 80,000 tons of orders reported last week 70,000 tons was for the Norfolk & Western.

Among total structural steel lettings of 25,000 tons was 5000 tons for a Pennsylvania Railroad office building, the first unit of Philadelphia terminal improvements that will cost \$60,000,000. A hotel in Toledo, Ohio, calls for 3500 tons. A bridge in Pittsburgh, up for bids, requires 6700 tons and the New York Central Railroad plans bridge construction that will take 6500 tons. The week's inquiries exceeded 38,000 tons.

An advance of 50c in pig iron prices in the

Valley and Pittsburgh districts and at Chicago, while not directly caused by the anthracite strike, has drawn attention to its possibilities. The first effect of the recent starting up of Connellsville ovens has been slightly lower prices for prompt coke. But on fourth quarter contracts coke operators ask \$4, as against \$2.75 in June on some third quarter contracts.

In all districts the pig iron situation is stronger, as it is realized that no merchant furnace now idle can blow in, under the present prospect as to fuel values, and come out whole on the late prices for foundry iron.

Recent buying of pig iron by important foundry companies is now seen as in large part protection against an expected upturn.

After having led the way in the improvement in pig iron and finished steel markets last month, steel scrap is now turning to weakness. In some quarters the change has brought more conservative views of the fall expansion of steel works activities.

Rather unusual so late in the season is the Steel Corporation's purchase of 100,000 tons of maniferous iron ore for use at Gary, as reported at Cleveland this week. More may be taken for other plants. Other transactions and inquiries in maniferous grades represent a total close to 200,000 tons.

THE IRON AGE composite pig iron price is higher, at \$19.46, compared with \$19.13 last week. It now stands at exactly the level of one year ago, but \$5.58 below that of two years ago.

Finished steel shows no change, THE IRON AGE composite price standing at 2.396c. per lb. for the fifth successive week. This is \$1.50 per net ton below last year and nearly \$7.80 below the figure of two years ago.

Pittsburgh

Pig Iron Advances — Finished Products Stronger—Railroad Car Steel Placed

PITTSBURGH, Sept. 15.—The holiday cut into last week's steel bookings of the Pittsburgh mills, but the incident is without effect upon sentiment as business again is on the increase and the trade is much encouraged by the appearance of the first railroad buying of any consequence that has come this way in several months. A New York Central order for 1000 cars has been divided equally between the two local builders, which now will have something to do after several months of very limited operations. Moreover, the steel required for the cars will be furnished by Pittsburgh mills. With no appreciable let-down in the demand for steel from the automobile industry, with agricultural implement manufacturers taking good-sized tonnages and with other consuming industries at least taking as much steel as they did recently, the advent of railroad buying rounds out the demand.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Sept. 15, 1925	Sept. 8, 1925	Aug. 18, 1925	Sept. 16, 1924
No. 2X, Philadelphia...	\$21.76	\$21.76	\$21.76	\$21.76
No. 2, Valley furnace...	19.00	18.50	18.50	20.00
No. 2, Southern, Cin'ti...	23.05	22.55	22.55	21.55
No. 2, Birmingham, Ala...	18.50	18.50	18.00	17.50
No. 2 foundry, Ch'go furn...	21.00	20.50	20.50	20.50
Basic, del'd eastern Pa...	20.50	20.50	20.50	20.00
Basic, Valley furnace...	18.50	18.00	18.00	19.00
Valley Bessemer del'd P'gh	21.26	20.76	20.76	21.76
Malleable, Chicago furn...	21.00	20.50	20.50	20.50
Malleable, Valley...	19.00	18.50	18.50	20.00
Gray forge, Pittsburgh...	20.26	19.76	19.76	21.26
L. S. charcoal, Chicago...	29.04	29.04	29.04	29.04
Ferromanganese, furnace...	115.00	115.00	115.00	95.00

Rails, Billets, etc., Per Gross Ton:

O.-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$43.00
Bess. billets, Pittsburgh...	35.00	35.00	35.00	36.00
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	36.00
O.-h. sheet bars, P'gh...	35.00	35.00	35.00	37.00
Forging billets, base, P'gh	40.00	40.00	40.00	42.00
O.-h. billets, Phila...	40.30	40.30	40.30	42.17
Wire rods, Pittsburgh...	45.00	45.00	45.00	46.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	1.90	1.90	1.90	2.00
Light rails at mill...	1.65	1.60	1.60	1.85

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.12	2.12	2.17	2.32
Iron bars, Chicago...	1.90	1.90	1.90	2.15
Steel bars, Pittsburgh...	1.90	1.90	1.90	2.00
Steel bars, Chicago...	2.10	2.10	2.10	2.00
Steel bars, New York...	2.24	2.24	2.24	2.34
Tank plates, Pittsburgh...	1.80	1.80	1.80	1.80
Tank plates, Chicago...	2.10	2.10	2.10	2.10
Tank plates, New York...	2.09	2.14	2.14	1.94
Beams, Pittsburgh...	1.90	1.90	1.90	2.00
Beams, Chicago...	2.10	2.10	2.10	2.10
Beams, New York...	2.14	2.24	2.24	2.24
Steel hoops, Pittsburgh...	2.40	2.40	2.40	2.60

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Sept. 15, 1925	Sept. 8, 1925	Aug. 18, 1925	Sept. 16, 1924
Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.15	3.15	3.15	3.50
Sheets, black, No. 28, Chi-				
cago dist. mill...	3.30	3.30	3.30	...
Sheets, galv., No. 28, P'gh	4.20	4.20	4.20	4.60
Sheets, galv., No. 28, Chi-				
cago dist. mill...	4.35	4.35	4.35	...
Sheets, blue, 9 & 10, P'gh	2.25	2.25	2.30	2.70
Sheets, blue, 9 & 10, Chi-				
cago dist. mill...	2.40	2.40	2.40	...
Wire nails, Pittsburgh...	2.65	2.65	2.65	2.80
Wire nails, Chicago dist.				
mill...	2.70	2.70	2.70	...
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.55
Plain wire, Chicago dist.				
mill...	2.55	2.55	2.55	...
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.50
Barbed wire, galv., Chi-				
cago dist. mill...	3.40	3.40	3.40	...
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Heavy steel scrap, P'gh...	\$19.00	\$19.00	\$19.00	\$19.00
Heavy steel scrap, Phila...	17.50	17.50	16.50	17.50
Heavy steel scrap, Ch'go...	16.25	16.75	16.50	16.50
No. 1 cast, Pittsburgh...	17.50	17.50	17.50	18.00
No. 1 cast, Philadelphia...	18.00	18.00	18.00	18.00
No. 1 cast, Ch'go (net ton)	18.00	18.00	17.50	18.50
No. 1 RR. wrot. Phila...	17.50	17.50	17.50	19.00
No. 1 RR. wrot. Ch'go (net)	15.25	16.25	16.25	15.00

Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt...	\$3.40	\$3.40	\$3.20	\$3.00
Foundry coke, prompt...	4.25	4.50	4.00	4.00

Metals,

Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Lake copper, New York...	15.00	14.87½	14.87½	13.50
Electrolytic copper, refinery	14.02½	14.50	14.50	13.00
Zinc, St. Louis...	7.75	7.72½	7.62½	6.25
Zinc, New York...	8.10	8.08½	7.97½	6.60
Lead, St. Louis...	9.25	9.25	9.50	7.95
Lead, New York...	9.60	9.60	9.50	8.10
Tin (Strait), New York...	58.50	57.75	57.50	47.00
Antimony (Asiatic), N. Y.	17.12½	17.12½	17.50	11.00

THE IRON AGE Composite Prices

Sept. 15, 1925, Finished Steel, 2.396c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	One week ago, 2.396c. One month ago, 2.396c. One year ago, 2.481c. 10-year pre-war average, 1.689c.
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Sept. 15, 1925, Pig Iron, \$19.46 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	One week ago, \$19.13 One month ago, 19.04 One year ago, 19.46 10-year pre-war average, 15.72
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High	Low
1923 2.824c., April 24 \$30.86, March 20	1924 2.789c., Jan. 15 \$22.88, Feb. 26 1925 2.560c., Jan. 6 \$22.50, Jan. 13
1923 2.446c., Jan. 20	1924 2.460c., Oct. 14 \$19.21, Nov. 3 1925 2.396c., Aug. 18 \$18.96, July 7
Finished Steel	Pig Iron

There is not yet full operation of any of the consuming industries and in few, if indeed any, of the steel products is there any forward buying, but there is a constancy of demand that is encouraging to steel manufacturers and, with no tendency on their part to enlarge production beyond a point suggested by incoming business, the price situation is getting stronger. This is particularly true in steel bars, makers of which have much longer production schedules than was the case during the summer and, while it cannot yet be said that 1.90c. base, has disappeared, that price now refers to business of exceptionally attractive character. Some makers have actually instructed their sales agents that they are no longer interested in business below 2c.

The steel industry in this and nearby districts is

averaging close to, if not actually, 75 per cent of ingot capacity. As noted in these reports a week ago, the Carnegie Steel Co. has taken off a blast furnace of its Carrie group, but has lighted one of the Edgar Thomson furnaces, leaving it with 29 furnaces in production. This company last week produced ingots at about 73 per cent of capacity and this week is scheduled for a 75 per cent production. Independent Steel Co. operations range anywhere from 60 per cent to full physical capacity, but the general average is 75 per cent. The Reliance Coke & Furnace Co. will start its Claire furnace at Sharpsville, Pa., next Saturday. The end of the week, therefore, will find 75 out of the 135 furnaces in this and nearby districts in production.

Makers of pig iron late last week announced an

advance of 50c. a ton on all grades in an effort to put the market on a level that at least would yield a new dollar for an old one. It is well established that no idle capacity could be placed in operation at today's price of coke and the recent selling price of pig iron, except at a loss; and to this extent there is a connection between the coke situation and the advance in pig iron. The coke market is slightly weaker than it was a week ago, since production has increased a little more rapidly than the demand. As a matter of fact, outside of some buying by one of the local steel companies, there has not been much activity in blast furnace coke, and the higher prices rest chiefly on purchases by those ordinarily using hard coal. The steel company which recently bought 10,000 tons of coke for September delivery and 20,000 tons for October shipment has put out an inquiry for 20,000 tons a month for the last quarter of the year. It is doubtful if it will have to pay much more than it did on its last takings, despite quotations as high as \$4 per net ton at ovens. The scrap market has grown slightly weaker since a week ago.

Pig Iron.—All producers of pig iron for market have advanced prices of all grades 50c. a ton and unlike former actions of a similar character this advance has become effective promptly because there was no considerable business pending carrying lower quotations at the time of the advance. As a matter of fact, for some time the demand has been confined to small tonnages representative of the actual requirements of buyers and it was figured that higher prices would be paid as readily as the former ones. This view is sustained by the fact that there have been sales of all grades at the new prices. Producers were influenced by the strength of the outside market, by the fact that they were losing money at the former prices and that there was little danger that any idle capacity would resume with coke and iron at their present levels. Small lots of foundry iron have sold lately at \$19, Valley furnace, for No. 2, and none now appears to be available at any less. There was one sale of 1000 tons of basic iron to a Pittsburgh district consumer at \$18.50, Valley furnace, and small lots of Bessemer and malleable have been moved at \$19.50 and \$19, respectively.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.50
Bessemer	19.50
Gray forge	18.50
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	19.00
Low phosphorus, copper free	\$27.75 to 28.00

Steel and Iron Bars.—Makers in this district are taking a firmer stand on prices and some of them have actually notified district sales offices that they are no longer interested in business at below 2c. base, Pittsburgh. Orders have been coming in such good volume lately that the position of makers as to additional business is strengthened and it now takes an unusually attractive order to bring out a price as low as 1.90c. On ordinary tonnages the market actually is 2c. Iron bars are steady and inquiry is greater with the appearance of railroad car buying. Prices are given on page 782.

Structural Steel.—Mills in this district are well provided with specifications as a result of good-sized fabricated steel bookings, and they are disposed to take a firmer stand on prices. The price range still is 1.90c. to 2c., but most makers now want 2c. on ordinary tonnages. A new bridge for Pittsburgh, bids for which will be opened Sept. 30, will require 6700 tons. Plain material prices are given on page 782.

Ferroalloys.—Business is slow in this district, with consumers interested only in small lots for early delivery and, in the case of ferromanganese, only for the maintaining of stocks. There is no change in prices, nor signs of an immediate change; consequently, the steel manufacturers feel safe in emulating the consumers of steel products in buying close to their actual requirements. Prices are given on page 783.

Semi-Finished Steel.—The Carnegie Steel Co. late this week is expected to announce its fourth quarter price on sheet bars. Independent producers in this and nearby districts have a quotation of \$35 for sheet

bars for either spot or contract shipment, and Pittsburgh mills are asking and claim sales of billets and slabs at that figure. Prices on these forms of steel are not nearly as clearly defined as they were prior to the abolition of Pittsburgh as the sole basing point on steel prices. Like finished steel, semi-finished material is sold largely on a delivered price basis and the actual price, figured on a Pittsburgh or Youngstown base, is governed by the freight to destination. It costs mills outside the Pittsburgh district as much to ship to Pittsburgh proper as to any place in the recognized Pittsburgh district and there is always the possibility that a price may mean "delivered" as well as "f.o.b." Pittsburgh. The effort of the mills, however, regardless of location, is toward \$35, f.o.b. Pittsburgh, on business in the Pittsburgh district in billets, slabs and sheet bars. Wire rods are moving steadily and on ordinary tonnages \$45, base, Pittsburgh or Cleveland, is the ruling price. There is not much open market activity in skelp. Prices are given on page 783.

Wire Products.—Very brisk demand still is reported for manufacturers' wire and the persistence of the buying is bringing about fuller occupation of drawing machinery than has been noted since the fore part of the year. Some mills actually are a little behind filling their orders and cannot promise as early shipment as they could a few months ago. In other directions, the improvement in business is maintained and with evidence lacking that jobbers are building up stocks—their orders all calling for prompt shipment—it is apparent that consumption is good. It is estimated that this branch of the industry now is averaging between 65 and 70 per cent of capacity, which compares with about 40 to 45 per cent in June. Conditions, as usual, are highly competitive in Cincinnati, Louisville, St. Louis and Kansas City, markets which all producers can easily reach, but there is a good deal of price stability in other districts, where business has been localized by freight considerations. The Pittsburgh market is steady at quotations given on page 782.

Rails and Track Supplies.—Railroads tributary to Pittsburgh have not yet done much in regard to their 1926 rail requirements, the only recent order coming to Pittsburgh being 4200 tons of rails and 200 tons of angle bars from the Canton & Youngstown Railroad. Light rails are beginning to feel the greater activity of soft coal mines incident to the suspension of hard coal mining and prices are somewhat firmer. On billet rails makers now will not go below 1.65c., base, mill, and on small lots 1.70c. is quoted with more confidence than recently. There is not much activity in the track accessories and prices are merely steady. Prices are given on page 782.

Tubular Goods.—There is still relatively high occupation of pipe making capacity, despite the fact that new business in oil country pipe is on a lighter scale than recently. The loss in that direction is made good by the fact that standard pipe orders are increasing in number with all makers and in size with some, while there is a steady flow of small line pipe orders to supplement the larger ones on which the mills are working. Prompt delivery is wanted on all standard pipe business placed and, in general, the makers are having no trouble in meeting that specification. In the past two years pipe making capacity has expanded fully 20 per cent and the fact that the mills do not accumulate backlogs and are able to make deliveries with promptness is ascribable to that development. The market is poor from a price standpoint in boiler tubes and that means that business leaves something to be desired, because if there were enough business prices would be more satisfactory. There is a good market for mechanical tubing; sale of this material, outside of the takings by the motor car builders, is largely through jobbers and in small lots. Resale prices are considerably higher than mill bases because of the expense entailed. Discounts are given on page 782.

Sheets.—The market is exhibiting a fair degree of steadiness both as to prices and demand. Buyers are not departing from a policy of purchasing supplies in accordance with their actual needs, but there is ample evidence that these needs are large in the fact that pur-

chases are so frequent. Little success has attended the effort to put up prices and buyers no doubt are impressed by that fact as well as by the promptness with which they are able to secure shipments on orders. The ruling market still is 2.25c., base, Pittsburgh, on blue annealed; 3.15c., base, on black, and 4.20c., base, for galvanized, but deviations from these prices are not entirely absent. Plate mill competition is still sharp in blue annealed sheets, while the extras permit some manipulation of black sheet prices. If there is strength in galvanized sheets, it is due more to the cost of zinc than because of the size of demand for the sheets. Long terms are not free from price shading. Prices are given on page 782.

Tin Plate.—Export business is reaching Pittsburgh mills and to some extent is offsetting the lighter demands of domestic consumers, who have largely supplied the demands incident to the packing of fruits, vegetables and other foods. The leading producer has taken one export order for 73,000 boxes in the past week and other export business that will enable it to maintain a fairly high rate of mill operation through next month, ordinarily a quite one, when the packers' can requirements have been supplied and not much other business is developing.

Cold-Finished Steel Bars.—Last week's bookings suffered somewhat from the holiday, but they are on the upgrade again this week. Buyers are still purchasing often in small lots and makers are not able to accumulate backlogs, but the feature of the situation is that just when there is doubt about maintenance of mill operations the orders come along. Prices are holding well, with 2.50c., base, Pittsburgh, still the ruling price on ordinary tonnages.

Plates.—About 12,000 tons of steel will be required for 1000 New York Central cars which will be built by local car companies. There is not much activity among other plate consuming industries but a steady flow of small-lot orders is providing a fair engagement of local capacity. Eastern mills are reported to be doing as low as 1.70c. base, Pittsburgh, on business in the South, but this price yields a relatively high mill base since shipments can be made by water. In a general way, 1.80c. to 1.90c. is representative of today's market, although only small tonnages are moving at the higher figure. Prices are given on page 782.

Hot Rolled Flats.—Business is still very satisfactory and prices appear well established at recent levels. They are given on page 782.

Cold Rolled Strips.—Demand is very steady and while consumers are not buying very far ahead, a good volume of orders is provided by frequent purchases. Most makers believe that the present price is too low, but there is no move on the part of any of them to seek more.

Bolts, Nuts and Rivets.—There is not much rush on the part of users of bolts and nuts to cover for fourth quarter, but the day to day demands are providing a good volume of business and prices are steady. The prospect for rivets is improved by the appearance of the railroads in the market for rolling stock. Prices and discounts are given on page 783.

Coke and Coal.—Recent additions to the coke producing capacity in the Connellsville district have produced some surplus over the current requirements and the market is slightly weaker than it was a week ago. There is still a quotation of \$3.75 for spot furnace coke, but there are also offerings as low as \$3.50, and even the latter price has not been interesting to pig iron producers. On fourth quarter tonnages producers want \$4, but there is some doubt that a local steel company which had put out an inquiry for 20,000 tons a month for that period, would pay anywhere near that price to secure the tonnage. Its last purchase was at \$3.40, and as all contracts contain a wage clause compensating the producer for any change in wages, a price of \$4, plus the higher cost in event of a wage increase, would make the coke rather costly. Foundry coke is more plentiful and good brands lately have been available at \$4.25 per net ton at ovens, which is about 25c. a ton less than last week's minimum price.

Some of the foundries appear to be taking selected furnace coke at a lower price. Coal is selling rather well, but the supply is still too large for prices to advance much. Prices are given on page 783.

Old Material.—The market has weakened slightly since last accounts on the steel works grades. This development finds its principal explanation in the fact that the Youngstown district steel company of which an appraisal is in progress was a good-sized purchaser just prior to getting into difficulty and is not taking deliveries during the inventory process. This has made necessary a good deal of reconsigning and recent buyers have been getting liberal shipments. They have not had to supplement recent purchases and the lack of demand has made dealers a little more anxious to sell. For heavy melting steel the market is not quotable at more than \$19. Borings and turnings are weaker, with \$15 all that now can be obtained from consumers. The market is quiet and none too steady in other kinds of scrap. The Baltimore & Ohio Railroad is taking bids until Sept. 14 on 16,000 gross tons.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$19.00
No. 1 cast, cupola size.....	17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md., Huntington, W. Va., and Franklin, Pa.	20.50 to 21.00
Compressed sheet steel	17.50 to 18.00
Bundled sheets, sides and ends..	16.50 to 17.00
Railroad knuckles and couplers..	21.00 to 21.50
Railroad coil and leaf springs..	21.00 to 21.50
Low phosphorus blooms and billet ends	23.00 to 23.50
Low phosphorus plate and other material	21.50 to 22.00
Railroad malleable	19.00 to 19.50
Steel car axles	21.00 to 21.50
Cast iron wheels	17.50 to 18.00
Rolled steel wheels	21.00 to 21.50
Machine shop turnings.....	15.00
Short shoveling turnings	15.00 to 15.25
Sheet bar crops	20.00 to 20.50
Heavy steel axle turnings	17.00 to 17.50
Short mixed borings and turnings	14.00
Heavy breakable cast.....	16.00 to 16.50
Stove plate	14.00 to 14.50
Cast iron borings.....	15.00
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	19.00

Trumbull Steel Co. Audit Incomplete

The audit of the Trumbull Steel Co., Warren, Ohio, has not yet been completed and a meeting of the board of directors scheduled for this week has been deferred. Three firms of accountants have been working on the company's books, but it is stated that they failed to agree and one firm is taking a new audit. Preferred and common stockholders of the company in Cleveland have formed a protective committee to look after their interests.

Ingot Mold Plant for Chicago

The Valley Mold & Iron Corporation, Sharpsville, Pa., will immediately begin the construction of an ingot mold plant at South Chicago, and expects to have it completed and in operation by Feb. 1, 1926. With the completion of this unit the company will be able to offer better service to its customers in the Central West, whose requirements have been supplied from Sharpsville. The company will draw molten pig iron from the Federal furnace plant, By-Products Coke Corporation, South Chicago, adjacent to which is the site of the new ingot mold foundry.

With the purpose of finding a more suitable mill-ball composition, a study of synthetic cast iron is being undertaken by the Bureau of Mines, at its Pittsburgh experiment station. In the course of preliminary studies, analyses have been made and Brinell hardness numbers have been taken on a number of cast iron and chrome steel balls collected from different points in the Western States.

Chicago

Pig Iron Advances 50c.—Blast Furnace Goes In—Extension of Deliveries on Bars

CHICAGO, Sept. 15.—An advance of 50c. per ton is in effect on Northern foundry, malleable, and high phosphorus pig iron. This change in price appears to have had little or no effect on the volume of new buying, which is still proceeding at a steady rate. Demand upon the part of contract customers is steady and no hold orders are being received. Orders on books indicate that September thus far will compare favorably with the corresponding period of any previous month this year. No. 1 furnace of the Youngstown Sheet & Tube Co. at Indiana Harbor was blown in last Thursday after having been out for repairs.

Demand for steel bars is steady and delivery dates have been slightly extended over what they were a week ago. Billets are firmer than at any time during the past three or four months. Rail bookings are in fair volume, although composed largely of small purchases for delivery this fall. There has been no change during the week in the rate of ingot production of either the leading interest or the foremost independent. Wire mill output remains unchanged and as a result of a slight increase in demand, mill stocks have been still further reduced. There is a noticeable increase in demand for wire nails, emanating chiefly from the rural districts. Large consumers appear to be out of the scrap market for the time being at least, and prices of a number of grades of old material have declined.

Pig Iron.—A stronger pig iron market is evidenced by an advance of 50c. a ton on Northern foundry, malleable and high phosphorus grades. Northern No. 2 is now quoted at \$21, local furnace. Northern No. 1 has advanced to \$21.50, and both malleable and high phosphorus are held at \$21. These advances have had but little effect upon buying, which continues at a steady rate. Orders on books of furnaces for the first half of September compare very favorably with the corresponding period of any other month so far this year. Shipments on contracts continue in good volume and there appears to be no hesitancy upon the part of purchasers to accept consignments when due. Jobbing foundries which cater to the automobile and farm implement industries are operating well. It is generally estimated that the bulk of fourth quarter requirements have been placed. A few inquiries are current for first quarter and first half deliveries. Pending business includes 500 tons of Northern foundry for a Chicago district melter, 400 tons of foundry for fourth quarter for a Chicago user, and three inquiries for low phosphorus, aggregating 500 tons, for Chicago and Milwaukee district melters. The market for Southern iron is comparatively quiet and prices remain steady. A Chicago melter has bought 500 tons of Southern foundry for barge and rail delivery. Sales during the week indicate that silvery is now firm at \$30.79, delivered Chicago, for 8 per cent.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	\$23.51 to 24.51
Southern No. 2 (barge and rail)	22.68
Low phos., sil. 1 to 2 per cent, copper free	31.20
Silvery, sil. 8 per cent	30.29 to 30.79
Ferrosilicon, 14 to 16 per cent.	44.00 to 44.50

Ferrolloys.—The market has been quiet and prices are unchanged.

We quote 80 per cent ferromanganese, \$122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$39.76 to \$40.04, delivered.

Plates.—Fully 75,000 tons of shapes, plates and bars will be required for railroad car construction which is now pending. This tonnage applies to the following inquiries: St. Louis-San Francisco, 3000 box cars; Baltimore & Ohio, 1000 hopper car bodies; New York Central, 1000 hopper cars; Illinois Central, 1000 automobile 200 flat and 200 stock cars; Louisville & Nashville, 500 gondola, 500 box and 250 flat cars. The Pennsylvania Coal Co. has closed for 900 tons of steel for barge construction. A fair number of small contracts have been placed for oil storage tanks and gas holders. An inquiry is pending for 3000 tons of tank steel for an oil producing company in Texas. Plate bookings substantially balance production and mill prices show no particular tendency to change.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plate out of stock.

Bars.—Soft steel bars are still one of the most active of the finished steel commodities. A large portion of the bar demand is traceable to manufacturers of farm implements and tractors as well as automobile makers, who have now made the usual fall changes in models and have again gone into full production. Deliveries on soft steel bars have been gradually extended, it being generally conceded that from four to five weeks' shipment is the best that can be expected. Bar iron demand has shown only slight improvement and is still far from satisfactory. Apparently not much can be hoped for in the way of a substantially increased buying until the railroads become more active in the market. The price remains steady at from 1.90 to 2c., Chicago. Rail steel bar prices are unchanged and mills are running at full capacity with the expectation that demand will assure a continuation of that rate of operations. Heavy bookings for concrete reinforcing and fence post manufacture are largely responsible for this situation.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 1.90c. to 2c., Chicago; rail steel, 2c., Chicago and 2c., mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Structural Material.—Local bookings of plain material are still in good volume. An assembly plant for the Ford Motor Co., Somerville, Mass., 2000 tons, has been awarded to the McClintic-Marshall Co. A building for the Grand Rapids National Bank, Grand Rapids, Mich., 680 tons, was let to the Rochester Bridge Co., Rochester, Ind. The Mississippi Valley Structural Steel Co. has a contract, requiring 700 tons, for a plant addition to the Western Clock Co., La Salle, Ill. Among the more important recent inquiries are 2000 tons for a power house addition for the Detroit Edison Co., 2000 tons for an addition to the Waukegan station of the Public Service Co. of Northern Illinois and 1500 tons for an extension to the Standard Oil Co.'s office building, Chicago.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Sheets.—The price situation remains steady and unchanged. Demand shows but little variation from the previous week and mills are having no trouble in keeping up with shipments.

Chicago delivered prices from mill 3.35c. to 3.40c. for No. 28 black, 2.45c. to 2.50c. for No. 10 blue annealed and 4.40c. to 4.45c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4c. base for black, and 5c. base for galvanized.

Wire Products.—The outstanding feature of the wire market is a substantial increase in demand for wire nails. This commodity has moved very slowly throughout the spring and summer months, notwithstanding marked activity in building construction. The

present improvement is largely accounted for by increased buying in the farm districts. Specifications are more liberal and contracting has shown slight improvement over the previous week. There are indications that both jobbers and dealers are increasing their stocks somewhat. At the same time, rather heavy reductions have been made in mill stocks. Mill operations are unaltered and mill prices, which show no tendency to change, are shown on page 782.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, \$3.05 per 100 lb.; common wire nails, \$3.15 per keg; cement coated nails, \$2.15 to \$2.20.

Cast Iron Pipe.—The ruling quotations on pipe range from \$41 to \$42, base Birmingham, for 6-in. and larger sizes. Pipe foundries, in general, are operating well and are sold ahead from 30 to 90 days. The general contract for 454 tons for Mundelein, Ill., has been awarded to Ray Tripp, Herington, Kan. James B. Clow & Sons will furnish 200 tons of 6-in., Class B, to the city of Flint, Mich. Waukegan, Ill., will take figures on 170 tons, 6-in., Class B, and Fond du Lac, Wis., is inquiring for 175 tons of the same size. Staunton, Ill., will soon receive tenders on 300 tons of 12-in., Class A.

We quote per net ton f.o.b. Chicago, as follows: Water pipe, 4-in., \$53.20 to \$54.20; 6-in. and over, \$49.20 to \$50.20; Class A and gas pipe, \$4 extra.

Bolts, Nuts and Rivets.—Contracting for the fourth quarter is well under way and prices remain unchanged. Specifications for bolts and nuts are being received at an unchanged rate. For mill prices see page 783.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to $\frac{1}{2}$ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to $\frac{1}{2}$ x 4 in., 50 off; larger sizes, 50 off; hot-pressed nuts, squares, tapped or blank, \$3.50 off; hot-pressed nuts, hexagons, tapped or blank, \$4 off; coach or lag screws, 60 per cent off.

Rails and Track Supplies.—Tonnage booked during the past week was in good volume and represented, in part, a number of small rail orders for fall delivery from lines which had not previously purchased sufficient tonnage to cover immediate needs. The Chesapeake & Ohio is in the market for 30,000 tons of rails, although there is no assurance that definite action will be taken on the inquiry until a decision is reached by the Interstate Commerce Commission in the Van Sweringen merger case. The Louisville & Nashville has placed 70,000 tons of rails with the Tennessee Coal, Iron & Railroad Co. A small tonnage of the tie plates for the Wheeling & Lake Erie has been placed locally.

Coke.—Shipments of by-product foundry coke are in good volume and are largely for fourth quarter requirements. Prices remain steady at \$9.75 at the ovens, or \$10.25, delivered in the Chicago switching district.

Reinforcing Bars.—Building activity, when measured by the reinforcing market, shows little tendency toward recession. Lettings are numerous and, although many of them are small, they bulk large in the aggregate. It is estimated that there is no less than 15,000 tons of reinforcing bars on the pending list. Warehouse prices on billet steel reinforcing bars are steady at 2.60c., Chicago. Lettings include:

Hirsch junior high school, Chicago, 500 tons of rail steel, to Inland Steel Co.

Hudson Motor Car Co., Detroit, truck shop, 164 tons, to Kalman Steel Co.

Mack International Motor Truck Corporation, Chicago, 225 tons, to Olney J. Dean & Co.

Pending work includes:

Y. M. C. A. building, South Chicago, 200 tons, general contract to Schmidt Bros. Construction Co.

American Bank Note Co., building, Chicago, 1100 tons.

Public school, 100th and Leavitt Street, Chicago, 150 tons, general contract to Michuda Bros.

G. H. Hammond, Chicago, killing building, 175 tons.

Seventeen-story apartment building, near Jackson Park, Chicago, 125 tons. Architect, Paul Olsen.

Abraham Lincoln school, Rockford, Ill., 100 tons.

Elementary public school, Wellington and McVicar Streets, Chicago, 150 tons.

Elementary public school, Fifty-eighth and Springfield Streets, Chicago, 150 tons.

Junior high school, North Shore and Bosworth Streets, Chicago, 500 tons.

Old Material.—The past week has shown a further tendency toward weakness in scrap. Large consumers have withdrawn from the market, and current purchases are confined to carlots for small users whose buying is for immediate requirements. In many cases dealers are now covering orders which were taken prior to the drop in the market. There is still a considerable tonnage appearing on track, which accentuates the weakness of prices. Railroad lists include the Chesapeake & Ohio, 6700 tons; the Rock Island, 5000 tons, and the Grand Trunk, 900 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$19.00 to \$19.50
Cast iron car wheels.....	17.50 to 18.00
Relaying rails, 56 lb. to 60 lb....	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels.....	19.75 to 20.25
Railroad tires, charging box size	20.00 to 20.50
Railroad leaf springs, cut apart	20.00 to 20.50
Rolls for rolling.....	19.25 to 19.75
Steel rails, less than 3 ft.....	19.50 to 21.00
Heavy melting steel.....	16.25 to 16.50
Frogs, switches and guards, cut apart	18.25 to 18.75
Shoveling steel	16.00 to 16.25
Drop forge flashings	12.50 to 13.00
Hydraulic compressed sheets....	14.25 to 14.75
Axle turnings	14.00 to 14.50
Steel angle bars	20.50 to 21.00
Steel knuckles and couplers.....	19.50 to 20.00
Coil springs	20.50 to 21.00
Low phos. punchings.....	18.50 to 19.00
Machine shop turnings.....	10.00 to 10.50
Cast borings	13.25 to 13.75
Short shoveling turnings	13.25 to 13.75
Railroad malleable	19.00 to 19.50
Agricultural malleable	18.00 to 18.50

Per Net Ton	
Iron angle and splice bars	18.50 to 19.00
Iron arch bars and transoms....	21.50 to 22.00
Iron car axles	27.50 to 28.00
Steel car axles	18.00 to 18.50
No. 1 busheling.....	13.25 to 13.75
No. 2 busheling	9.50 to 10.00
Pipes and flues	12.00 to 12.50
No. 1 railroad wrought.....	15.25 to 15.75
No. 2 railroad wrought.....	14.75 to 15.00
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	17.50 to 18.00
No. 1 agricultural cast	17.00 to 17.50
Locomotive tires, smooth	16.50 to 17.00
Stove plate	15.00 to 15.50
Grate bars	15.00 to 15.50
Brake shoes	15.00 to 15.50

Canadian Scrap Sales Pick Up

TORONTO, ONT., Sept. 14.—Trading in iron and steel scrap improved during the past two weeks. Toronto dealers report a better volume of sales for this period both for spot delivery and on future account.

The greater part of current sales is to consumers in the Hamilton district where there is a good demand for heavy melting steel and turnings. In Montreal the market is stagnant in so far as material for home consumption is concerned. Montreal dealers, however, report a good volume of inquiries and sales of old material from across the boundary.

Dealers are having no difficulty in picking up all the scrap they require. Railroads are throwing regular monthly allotments on the market and the Electric Commission of Ontario is offering scrap from time to time. While dealers have not revised their buying price list of late it is evident that a stronger tendency is gradually appearing and in some cases prices slightly above those quoted have been paid:

Gross Tons		
	Toronto	Montreal
Steel turnings	\$9.50	\$8.00
Machine shop turnings.....	9.50	8.00
Wrought pipe	7.00	5.00
Rolls	11.00	12.00
No. 1 wrought scrap.....	12.00	13.00
Heavy melting steel	11.00	11.00
Steel axles	17.00	18.00
Axles, wrought iron	18.00	20.00
Net Tons		
Standard car wheels	15.00	15.00
Malleable scrap	13.00	13.00
Stove plate	13.00	13.00
No. 1 machinery cast	16.00	16.00

New York

Only Moderate Car Buying Indicated— Pig Iron More Active

NEW YORK, Sept. 15.—A better volume of business in pig iron is reported for the past week, good estimates of the total putting it around 10,000 tons. Several Connecticut foundries bought and a fair business was done with New Jersey buyers. The inquiry of an elevator company, which was put last week at 800 tons, resulted in the purchase of quite a little more than this. Another transaction was the taking of 1000 tons of malleable pig iron for early delivery at Depew, N. Y. The American Locomotive Co. is in the market for 4250 tons for the Dunkirk, Schenectady and Richmond foundries. A few hundred tons of charcoal iron is included. Another pending inquiry is for 5000 to 10,000 tons, delivery this year, at a plant outside the metropolitan district for which the buying is done in New York. Among other inquiries are one for 500 to 600 tons for November and one for 500 tons for October. In only a few cases is there interest in iron for the first quarter. The action of Shenango and Mahoning Valley furnaces in advancing their quotations 50c. has had a sentimental effect on eastern Pennsylvania iron, but that market in the main is represented by a \$20 to \$20.50 range. Of the considerable purchases of British iron made some time ago for shipment to pipe foundries near the Atlantic seaboard 6000 tons has already been shipped to Philadelphia and space has been chartered on two vessels for additional amounts.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	\$23.02 to \$23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.52 to 24.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	24.02 to 24.52
Buffalo, sil. 1.75 to 2.25	23.41 to 23.91
No. 2 Virginia, sil. 1.75 to 2.25	28.44 to 28.94

Finished Iron and Steel.—In anticipation of better business in fourth quarter, steel companies are trying to give strength to prices, but as some mills still need tonnage to round out schedules they have succeeded only in a measure. Steel bars are not so easily obtainable at 1.90c., Pittsburgh, even on desirable lots, but sales to preferred customers have been made at that figure within the past few days. Most transactions are now at 2c. On plates 1.75c., Pittsburgh, is now quite common from Eastern mills on anything from a carload upward, while on especially attractive tonnages, which are rare, 1.70c., Pittsburgh, has been named in a few instances, but not all mills have met this low figure. On sheets for fourth quarter the ruling quotations are 4.30c., base Pittsburgh, for galvanized, 3.15c. for black and 2.30c. for blue annealed, but for early shipment concessions are still obtainable, amounting to \$2 a ton on galvanized and \$1 a ton on black and blue annealed. Prices on other products are holding firmly, this being true of pipe, tin plate, structural shapes, wire products and cold finished steel bars and shafting. Structural steel work in the week has not been of outstanding importance, but a good deal of work is in prospect in New York that will probably be closed this month, anticipating the change in bidding practice fostered by the Structural Steel Board of Trade, wherein only lump sum prices on complete plans instead of prices per ton will be quoted after Nov. 1. Fabricated steel prices show some strengthening. Hopes are not so strong of a car-buying movement of sufficient volume to exert a marked effect upon steel business, although the past week has brought out more inquiry than has been pending in some time. In addition to 1000 hopper cars bought by the New York Central, inquiries appeared from the St. Louis-San Francisco for 3000 composite box cars and from the Louisville & Nashville for 1250 freight cars of various types. A year ago the railroads were buying much more heavily. A local contracting firm is inquiring for 1500 tons of concrete reinforcing bars for the new factory of the

New England Confectionery Co., Boston. E. A. Tucker, Boston, has been awarded 600 tons of bars for the Harvard Business School, Cambridge, Mass.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.24c. to 2.34c.; plates, 2.09c. to 2.19c.; structural shapes, 2.14c. to 2.24c.; bar iron, 2.14c. to 2.24c.

Warehouse Business.—Movement from jobbers' stocks is slightly better but prices lack firmness. Most lines are subject to price cutting, especially in the heavier products, as plates, shapes and bars. Sales of pipe in August exceeded those of August, 1924, and 1925 to date is ahead of the corresponding period last year. Tool steel is active at steady prices. Quotations are unchanged, excepting copper sheets and lead which have fallen off ½c. We quote boiler tubes per 100 ft. as follows:

Lap welded steel tubes, 2-in., \$17.33; seamless steel, 2-in., \$20.24; charcoal iron, 2-in., \$25; 4-in., \$67.

Cast Iron Pipe.—Private purchasing of bell and spigot pipe is maintaining a fair degree of activity, so that most makers are well booked for the next 60 to 90 days. Municipal inquiry is light, the City of New York opening tomorrow being the only tonnage of size in this district. Prices continue firm and unchanged. In the soil pipe market, one Birmingham maker is reported to have reduced discounts two points in the expectation that other makers will follow this price advance, but whether or not the new price will hold seems to be an open question.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$50.60 to \$51.60; 4-in. and 5-in., \$55.60 and \$56.60; 3-in., \$65.60 to \$66.60, with \$5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 45 to 50 per cent off list; heavy, 55 to 60 per cent off list.

Coke.—Increasing firmness marks the beehive coke situation, \$3.50 to \$4 per net ton at ovens, being asked rather generally for spot furnace grade and \$4.50 to \$4.75 for foundry. A buyer seeking 500 tons of furnace coke today paid the higher figure, \$4; one operator is taking no business at less. Buyers show greater anxiety to cover against an anthracite shortage. On by-product we quote \$10.41 Newark or Jersey City.

Old Material.—Buying prices of brokers are off 50c. per ton on a number of grades. On No. 1 heavy melting steel, \$16 to \$16.50 per ton, delivered eastern Pennsylvania, represents the range of brokers' offerings today. Machine shop turnings are being purchased at \$13.50 per ton, delivered to a Phoenixville consumer, and borings and turnings are quotable at \$12 to \$12.50 per ton, delivered on a low freight rate into eastern Pennsylvania. Heavy breakable cast is not so strong, the market being well represented by the usual buying price of \$17 per ton, delivered on a \$3.53 freight rate. Specification pipe, perhaps, shows greater firmness than most other grades, holding at \$17 per ton, delivered to an eastern Pennsylvania user. While prices are slightly off from recent levels, there is no distinct undertone of weakness as yet.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	\$12.00 to \$12.50
Heavy melting steel (railroad or equivalent)	13.25 to 13.50
Rails for rolling	14.25 to 14.75
Relaying rails, nominal	23.00 to 24.00
Steel car axles	21.50 to 22.00
Iron car axles	24.00 to 24.50
No. 1 railroad wrought	14.50 to 15.50
Forge fire	10.50 to 11.00
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (steel mill)	9.50 to 10.00
Cast borings (chemical)	13.00 to 14.00
Machine shop turnings	9.25 to 10.00
Mixed borings and turnings	9.00 to 9.50
Iron and steel pipe (1 in. diam. not under 2 ft. long)	12.50 to 13.00
Stove plate	11.00 to 12.00
Locomotive grate bars	11.00 to 11.50
Malleable cast (railroad)	15.00 to 15.50
Cast iron car wheels	13.50 to 14.00
No. 1 heavy breakable cast	13.50 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	\$17.50 to \$18.00
No. 1 heavy cast (columns, building material, etc.), cupola size	16.00 to 16.50
No. 2 cast (radiators, cast boilers, etc.)	15.00 to 15.50

San Francisco

Structural Material Features Holiday Market—Price Weakness Continues

SAN FRANCISCO, Sept. 12 (*By Air Mail*).—With Monday and Wednesday legal holidays, and the entire past week given over to celebration of the seventy-fifth anniversary of California's admission to the Union, there has been little opportunity for the development of new market features. Fresh inquiries are few in number, but a substantial volume of pending business has been closed. Structural material again is the leading item of interest, although a decidedly weaker price situation in bars, and the attention given to the Mokelumne project are prominent developments of the week.

The board of engineers engaged in analyzing the various bids on the Mokelumne job is expected to present its first recommendations to the directors of the East Bay Municipal Utility District Sept. 15, but no awards are looked for until the latter part of the month.

Price weakness continues in nearly all markets, and especially in bars, on which 2.25c. c.i.f. Coast ports, has been named by an Eastern mill for a moderate tonnage. Reinforcing bar jobbers, in some instances, have submitted bids recently at 3c., base, and less, for relatively small tonnages from stock.

Pig Iron.—Little of consequence has developed during the week, both on account of the holidays and because buyers seem inclined to wait for more definite indications of price stabilization. The only large inquiry known to be pending calls for about 1000 tons of malleable iron.

*Utah basic	\$27.00 to \$28.00
*Utah foundry, sil. 1.75 to 2.25	27.00 to 28.00
**English foundry	26.00
**Belgian foundry	25.00
**Dutch foundry	24.25 to 25.00
**Indian foundry	25.00
**German foundry	25.00 to 26.00

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Pending business closed during the week totals 3683 tons. The largest award, 1783 tons, has been taken by the Wallace Equipment Co. for a bridge across the Puyallup River on State Road No. 1, near Tacoma, Wash. The Llewellyn Iron Works has been awarded 1200 tons for a Southern California Edison Co. power plant at Long Beach, Cal. Plans have been completed for an 18-story office building at Sixteenth Street and Telegraph Avenue, Oakland, Cal., 1300 tons, and the Cascade Locks Bridge in Washington calls for about 1500 tons. The Terminal Warehouse, Los Angeles, which called for 800 tons, and a California Portland Cement Co. machine shop at Colton, which called for 200 tons, have been both postponed indefinitely. While it is intimated that 2.30c., c.i.f. Coast ports, is possible on desirable tonnages, 2.35c. is more general, and 2.40c. is still being named. Some buyers believe that the tendency is toward a lower level, but Eastern mill representatives, for the most part, insist that present quotations will be maintained.

Plates.—The Coast Culvert & Flume Co. has taken 1500 tons required by the Eugene Water Board, Eugene, Ore., for the McKenzie River water supply system. The Standard Oil Co. has placed about 150 tons with an unnamed mill. Medford, Ore., will hold a referendum Oct. 6, on a bond issue of \$1,100,000 for a 38-mile pipe line which may require 3500 to 4000 tons. A seven-mile, 8-in. steel pipe line is contemplated by Sutherland, Ore., and bids may be called soon for about 500 tons of either riveted or standard pipe. Tank work in San Pedro, Cal., for the Pan-American Petroleum & Transport Co. may require 750 tons instead of 100 tons as previously reported. Prices are virtually on the basis of a week ago, 2.25c. to 2.30c., c.i.f. Coast ports.

Bars.—Prices are definitely weaker, an Eastern mill having quoted 2.25c., c.i.f. Coast ports, on a moderate

tonnage of reinforcing bars. Jobbers have quoted 3c. base, and less, on an out-of-stock basis, on relatively small tonnages. While 3.80c. base, is still being named by local jobbers on small lots, cut to length, this price is nominal. Competition is keen, and the large number of small lots being awarded almost daily, have brought out such a wide variation in prices, that it is difficult to determine the actual market minimum. Similar conditions prevail in soft steel bars. Local mills are understood to have quoted as low as 2.30c., f.o.b. San Francisco, on 100-ton lots, although in some instances, apparently, they are still getting 2.35c. to 2.40c. Among the larger lettings of reinforcing bars placed recently are the following:

Pyallup River Bridge, Tacoma, Wash., 725 tons, to Pacific Coast Steel Co.

Anaheim Boulevard Viaduct over Dominguez Creek, East Wilmington, Los Angeles, Cal., 850 tons, to unnamed interest through North Pacific Construction Co., general contractor.

Rails and Track Supplies.—The Southern Pacific Co. has placed 2000 tons of track spikes and 240 tons of track bolts with a Western mill, and 4200 tons of tie plates with Eastern and local mills. The San Francisco Municipal Railway Co. has placed five carloads of special street railroad material with an Eastern mill. The Central Manufacturing District, Union Stock Yards, Los Angeles, is asking for quotations on 200 tons of 80-lb. rails.

Warehouse Business.—Business during the week has been quiet because of the double holiday. Prices remain unchanged, although weaker tendencies in some lines are indicated.

Merchant bars, \$3.30 base, per 100 lb.; merchant bars, $\frac{1}{2}$ in. and under, rounds, squares and flats, \$3.80 base, per 100 lb.; soft steel bands, \$4.15 base, per 100 lb.; angles, $\frac{1}{2}$ in. and larger x $1\frac{1}{2}$ in. to $2\frac{1}{2}$ in., inc., \$3.30 base, per 100 lb.; channels and tees, $\frac{1}{2}$ in. to $2\frac{1}{2}$ in., inc., \$3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, \$3.30 base, per 100 lb.; tees, 3 in. and larger, \$3.30 base, per 100 lb.; universal mill plates, $\frac{1}{4}$ in. and heavier, stock lengths, \$3.30 base, per 100 lb.; spring steel, $\frac{1}{4}$ in. and thicker, \$6.30 base, per 100 lb.; wire nails, \$3.50 base, per 100 lb.; cement coated nails, \$3 base, per 100 lb.; No. 10 blue annealed sheets, \$3.70 per 100 lb.; No. 28 galvanized sheets, \$5.75 per 100 lb.; No. 28 black sheets, \$4.65 per 100 lb.

Cast Iron Pipe.—Long Beach, Cal., awarded 900 tons of 6, 8, 10, 12 and 20-in. B to the United States Cast Iron Pipe & Foundry Co., and the same company is low bidder on 371 tons of 16-in. B for Los Angeles.

Coke.—Interest is lagging, little in the way of fresh developments having come up during the week. Prices are unchanged.

English beehive, \$15 to \$16 at incoming dock, and English by-product, \$12 to \$14; German by-product, \$11.50 to \$12.

Birmingham

Cast Iron Pipe Makers Cover Pig Iron Requirements for Six Months

BIRMINGHAM, Sept. 15.—Large melters of pig iron taking on tonnage for the remainder of the year and through the first quarter, together with small consumers continuing week-to-week buying have strengthened the pig iron market here. On spot iron \$19 per ton has been quoted for No. 2 foundry, but large melters are said to have purchased at \$18 to \$18.50.

Eleven blast furnaces in this district are on foundry iron and 13 on basic. The Republic Iron & Steel Co. will blow out a furnace this week for relining and later the Central Coal & Iron Co. will blow out its furnace for repairs. The former company is adding blowing engines and other equipment to its Thomas plant. Cast iron pipe makers have recently purchased in quantity, but the radiator works are expected to be on the market shortly for a considerable tonnage.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$18.50 to \$19.00
No. 1 foundry, 2.25 to 2.75 sil.	19.50 to 20.00
Basic	19.00
Charcoal, warm blast	30.00 to 32.00

Finished Steel.—Steel mills and open hearth furnaces are producing steadily and finishing mills are also busy. The new billet mill of the Tennessee Coal, Iron & Railroad Co. is now in operation. Soft steel bars are quoted 2.05c. to 2.15c., Birmingham.

Cast Iron Pipe.—Purchase of pig iron to cover operations for nearly six months indicates a steady demand and a comfortable volume of unfilled orders. All plants will be kept in steady operation this winter. One plant will have a new centrifugal pipe shop by spring; another will add a department for smaller-sized pipe, and still another will increase its present capacity in pressure pipe. Quotations are firm, ranging \$41 to \$42 on pipe 6 in. and over.

Coke.—The blowing out of two blast furnaces will cause a slight reduction in coke production and the by-product plant at Ensley will probably run slower. Low water recently caused the shutting down of 103 beehive ovens of the Alabama By-Products Corporation in the northern part of Jefferson County. Commercial coke demands show steadiness and expectation is for an early increased demand. Quotations are unchanged at \$4.50 to \$5 on foundry coke.

Scrap.—Heavy melting steel is quoted at \$13 and an estimate is that a greater quantity of the product is being melted now in this district than ever before. Some old material is finding its way into the blast furnaces. Dealers express confidence in winter activities and indicate preparedness for increased demand.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	16.00 to 17.00
Iron axles	16.00 to 17.00
Steel rails	13.00 to 14.00
No. 1 cast	16.00 to 16.50
Tramcar wheels	16.50 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 13.50
Machine shop turnings	7.00 to 8.00
Cast iron borings	7.00 to 8.00
Rails for rolling	16.50 to 17.00

Boston

Pig Iron Sales Fall Off—Ford Plant Placed—Scrap Moves in Small Lots

BOSTON, Sept. 15.—The middle of September finds pig iron buying at a minimum, sales the past week having suffered a sharp slump. Bookings for the week approximate 1000 tons, largely 2.25 to 2.75 and 2.75 to 3.25 per cent silicon material. Firmer prices noted in Western markets are not reflected here. Buffalo No. 2 plain is still available at \$18.50 to \$19, furnace, and No. 2X at \$18.50 to \$19.50, and eastern and western Pennsylvania, Virginia and Alabama irons are the same as last week in price. The failure of prices to advance is attributed to the continued offerings of foreign iron. Imports of iron for August totaled 8248 tons, of which 1266 tons were shipped from Holland, 6872 from India and the remainder from Germany. Imports from Jan. 1 to Aug. 31 were 66,708 tons, consisting of 16,923 tons shipped from Holland, 44,218 tons from India, 750 tons from England, 3606 tons from Belgium, 500 tons from Scotland and 711 tons from Germany. A substantial percentage of shipments from Holland originated in Germany, but the exact figures are not available.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$23.90 to \$24.65
East. Penn., sil. 2.25 to 2.75.....	24.40 to 25.15
Buffalo, sil. 1.75 to 2.25.....	23.41 to 23.91
Buffalo, sil. 2.25 to 2.75.....	23.41 to 24.41
Virginia, sil. 1.75 to 2.25.....	23.42 to 29.42
Virginia, sil. 2.25 to 2.75.....	28.92 to 29.92
Alabama, sil. 1.75 to 2.25.....	28.10 to 28.60
Alabama, sil. 2.25 to 2.75.....	28.60 to 29.10

Shapes and Plates.—Structural steel lettings of 100 tons or more are less numerous, but there has been an appreciable increase in small business. The contract for the Ford Motor Co. assembling plant, Somerville, Mass., 2300 tons, was placed with the Detroit office of

McClintic-Marshall Co. Shapes are steady at \$2.265 to \$2.365 per 100 lb., delivered common Boston rate points. Arthur D. Little, Inc., Boston, has placed a contract for tanks for a Rhode Island plant, requiring 200 tons of plates, and a local yacht builder has bought 200 tons of plates. Otherwise the market for plates has been dull, with prices unsettled at \$2.115 to \$2.165 per 100 lb., delivered common Boston rate points.

Coke.—Warm sultry days, together with the fact that most foundries have anticipated requirements for the next month or longer, have slowed up the movement of by-product foundry coke from New England ovens. For such material the market is \$12 a ton, delivered, where the freight rate does not exceed \$3.10. A lively demand continues for domestic coke and indications are New England consumption of such fuel in 1925 will establish a new high record. Higher prices for coke in the Connellsville region are without influence on the local market, which, however, is firm.

Old Material.—With the eastern Pennsylvania scrap market more active, and with New England consumers of heavy material still buying, a slight increase in the movement of heavy melting steel, pipe, scrap rails and steel turnings is noted. The highest price paid for heavy melting steel recently is \$12.75 a ton on cars shipping point, or 25c. under the recent peak. Most business is on a basis of \$12.50. For pipe, \$12.50 to \$12.60 on cars is the prevailing range of prices, although \$12 is the most some dealers will pay. For scrap rails \$12.50 appears the minimum and that is the best some firms can do on rails for rerolling. About 90 per cent of the steel turnings bought recently were taken at \$9 on cars. No large tonnages of any material are involved in single transactions, purchases being largely confined to car lots. New England foundries continue to buy machinery cast in fairly liberal weekly aggregate tonnages, but from local and nearby yards; consequently Boston houses do not figure conspicuously in the market.

The following prices are for gross ton lots delivered consuming points:

Textile cast	\$20.00 to \$21.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	15.50 to 16.50
Stove plates	13.50 to 14.00
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$12.50 to \$12.75
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diam., over 2 ft. long)	12.00 to 12.60
Machine shop turnings	9.00 to 9.50
Cast iron borings, chemical.....	11.00 to 11.50
Cast iron borings, rolling mill.....	9.00 to 9.50
Blast furnace borings and turnings	8.50 to 9.00
Forged scrap	9.50 to 10.50
Bundled skeleton, long	10.00 to 10.50
Forged flashings	10.00 to 10.50
Bundled cotton ties, long	9.00 to 9.25
Bundled cotton ties, short	10.00 to 10.50
Shaftings	19.00 to 19.50
Street car axles	18.00 to 18.50
Rails for rerolling	12.50 to 13.50
Scrap rails	12.50 to 13.00

Cincinnati

Buyers of Finished Steel Hesitant—Southern Iron Advances While Ironton Product Weakens

CINCINNATI, Sept. 15.—A moderate increase in pig iron sales has enlivened the local market. Producers in the Ironton district, however, have not been able to sustain their quotation of \$20, furnace, and are taking business at \$19.50. Some orders have been taken at the former figure, but invariably they have been small lots. Sellers state that \$19, base Birmingham, is generally quoted on Alabama iron for immediate delivery. Offers of \$17.50, Birmingham, for Tennessee iron have been refused by producers, and \$18 is a usual quotation. A local melter has closed for 1500 tons of Northern foundry iron, while a Southern consumer has contracted for 1500 tons of Tennessee iron. It is reported, but not confirmed, that an Ironton furnace has booked from 7000 to 10,000 tons of iron for delivery to a

southern Ohio consumer. A Michigan melter has closed for 4600 tons of foundry and malleable grades for prompt shipment, the business going to a Lake furnace. Other sales include 500 tons of foundry to a Richmond, Ind., melter and 400 tons of malleable to a Connersville, Ind., company. A few scattered inquiries have appeared. The Cadillac Motor Car Co., Detroit, is in the market for 750 tons of silvery iron, and the American Car & Foundry Co. is inquiring for 400 tons for delivery to its Huntington, W. Va., plant. It is estimated that 85 per cent of the consumers in this territory have covered their fourth quarter needs in Northern iron. The Belfont stack of the Belfont Steel & Wire Co., Ironton, Ohio, has gone into blast following a three weeks' shutdown for relining. This is the only merchant furnace in the Ironton district which is now operating.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	\$23.05
Alabama fdy., sil. 2.25 to 2.75	23.05 to 23.55
Tennessee fdy., sil. 1.75 to 2.25	22.05
Southern Ohio silvery, 5 per cent	28.27
Southern Ohio fdy., sil. 1.75 to 2.25	21.77 to 22.27
Southern Ohio, malleable	21.77 to 22.27

Bars, Plates and Shapes.—Several sellers report a decline in orders which is attributed to the hesitancy of buyers to place business at present prices. Eastern mills declare positively that they will not accept bar and shape tonnages under 2c., Pittsburgh, but consumers are shopping around in the expectation of securing more favorable quotations. Sellers are making a sustained effort to establish plates on a basis of 1.90c., Pittsburgh, but 1.85c., Pittsburgh, can be done on attractive lots. Fabricators are fairly busy on the basis of numerous small lettings. The General Iron Works has been awarded 950 tons for a new boiler works of the Chesapeake & Ohio Railroad at Huntington, W. Va.

Sheets.—While orders have been individually small, they form a substantial tonnage in the aggregate. Buyers are disposed to limit purchases to their needs for September and October. This policy conforms to the plans of producers who are reluctant to take business for later delivery. Black sheets have not recovered from their recent drop, although they are again slowly acquiring strength. They can be obtained at 3c. to 3.15c., Pittsburgh. Sales of blue annealed have increased, but the expansion in demand has been accompanied by a softening of prices. Quotations of 2.20c., Pittsburgh, have appeared, but a range from 2.20c. to 2.30c., Pittsburgh, better represents the market. Several sellers complain that the early fall season has failed to bring out as pronounced a demand for galvanized sheets as they had hoped for. The price, however, is firm at 4.20c., Pittsburgh, with some sales being made at 4.25c. and 4.30c. Automobile sheets are holding steadfastly to 4.25c., Pittsburgh. Sellers declare that they are securing attractive orders on specialties, such as enameling stock. Mills are operating at 80 per cent of capacity and have indicated that they will increase this rate during the coming week.

Wire Products.—A fair sprinkling of orders has been placed for prompt delivery. Sellers state that business booked during the first two weeks of September shows an appreciable increase over the corresponding period in August, although jobber buying is limited to small lots. Prices are substantially unchanged with Eastern mills quoting 2.65c., Pittsburgh, on common wire nails and 2.50c., Pittsburgh, on plain wire, and independent mills in the Ironton district shading those figures. The City of Cincinnati has appropriated \$10,000 for the purchase of steel cables for its fire alarm system.

Reinforcing Bars.—The Pollak Steel Co. will supply 450 tons for a new warehouse of the Atlantic & Pacific Tea Co. at Columbus, Ohio. The H. R. Blagg Co., Dayton, Ohio, has been awarded the general contract for a new North Dayton high school, calling for 160 tons. Price Brothers, Dayton, Ohio, are the low bidders on the general contract for the Sunrise Avenue bridge, Dayton, which will take 125 tons.

Warehouse Business.—Sales are maintaining a pace about equal to that of August. Nail jobbers declare that consumers are manifesting more interest, although orders are confined to small lots for immediate shipment. Demand for bars is active, although slightly less so than a week ago. Galvanized and blue annealed sheets are moving at a fair rate. Prices are steady and remain unchanged.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 9 annealed wire, \$5 per 100 lb.; common wire nails, \$2.95 per keg base; cement coated nails, \$2.40 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$3.75 base; small rivets, 65 per cent off list. Boiler tubes: prices net per 100 ft. lap welded steel tubes, 2-in., \$18; 4-in., \$38; seamless, 2-in., \$19; 4-in., \$39.

Coke.—Domestic coke is displaying considerable activity. Some producers are unwilling to book orders beyond this month, but others are selling for shipment several months ahead. Prices are strong, but no further advances have been recorded. By-product coke companies in the Portsmouth and Ironton district are operating at 90 per cent of capacity. By-product foundry coke in this district has been sold below the \$6.50, Connellsville, basis.

Old Material.—Continued dullness pervades the market. Mills have sufficient material on hand to supply their requirements in the near future, but prices are holding well in the absence of consumer buying. The Louisville & Nashville had a fair-sized list which closed on Sept. 14, while the Southern has approximately 7000 tons to offer on Sept. 16.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	\$15.00 to \$15.50
Scrap rails for melting	14.50 to 15.00
Short rails	18.50 to 19.00
Relaying rails	28.00 to 28.50
Rails for rolling	15.50 to 16.00
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	17.00 to 17.50
Railroad malleable	16.00 to 16.50
Agricultural malleable	15.50 to 16.00
Loose sheet clippings	10.50 to 11.00
Champion bundled sheets	12.00 to 12.50
Per Net Ton	
Cast iron borings	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
No. 1 machinery cast	19.00 to 19.50
No. 1 railroad cast	15.50 to 16.00
Iron axles	23.00 to 23.50
No. 1 railroad wrought	12.00 to 12.50
Pipes and flues	9.00 to 10.00
No. 1 busheling	11.00 to 11.50
Mixed busheling	9.50 to 10.00
Burnt cast	10.00 to 10.50
Stove plate	11.00 to 11.50
Brake shoes	41.00 to 41.50

St. Louis

Scrap Declines—6000-Ton Sale of Foundry Coke—Heat Affects Iron Melt

ST. LOUIS, Sept. 15.—Sales of pig iron during the week amounted to less than 3000 tons, of which 1000 tons, made by the St. Louis Coke & Iron Co., was for a west side melter specializing in railroad material. No sizable inquiries are pending, and it is not expected that there will be any business of consequence until after the opening of the fourth quarter. However, requests for anticipated shipment and the number of scattering small sales would indicate that stocks in hands of melters are small. Hot weather, on the other hand, has been a factor in reducing the melt. The market is firm at unchanged prices, makers showing no inclination to press sales.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	\$22.66 to \$23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	22.66 to 23.16
Alabama fdy., sil. 1.75 to 2.25 (rail)	22.67 to 24.17
Tennessee fdy., sil. 1.75 to 2.25	22.67
Granite City iron, sil. 1.75 to 2.25	22.21 to 22.81

Finished Iron and Steel.—The first railroad inquiry of size in some time came from the Wabash this week, and was for 156 tons of reinforcing bars from re-rolled rail or billet stock. For a St. Louis sewer contract to be let this week, 240 tons of reinforcing bars will be required. The principal reinforcing bar order placed was 125 tons for the Mavrakos candy factory, which went to the Laclede Steel Co. Business in other lines is quiet.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.50c.; galvanized sheets, No. 28, 5.50c.; black corrugated sheets, 4.65c.; galvanized, 5.65c.; cold-rolled rounds, shafting and screw stock, 3.70c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{1}{4}$ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, \$3.50; hexagons, blank or tapped, \$4 off list.

Coke.—The principal transaction of the week was the sale of 6000 tons of foundry coke by the St. Louis Coke & Iron Co. for shipment throughout the remainder of the year. With the thermometer at 100 and over, there is no interest in coke for domestic use.

Old Material.—With the exception of rails, which are 50c. to \$1 higher than last week, most grades of old material are lower, the declines ranging from 25c. to \$1 per ton. The mills' persistency in refusing to buy has finally dispelled the bullish tendencies of the dealers, who had been consistently running up prices despite the lack of buying. Offerings now are larger than the dealers can take care of. Railroad lists are heavy, including: Baltimore & Ohio, 16,800 tons; Southern Railway, 6800 tons; Chicago, Burlington & Quincy, 3000 tons of 60-pound rails; Canadian National, 2000 tons; Northern Pacific, 2156 tons; Wabash, 2270 tons; Texas & Pacific, 500 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	\$15.50 to \$16.00
Rails for rolling	20.00 to 20.50
Steel rails less than 3 ft.	20.00 to 20.50
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	31.00 to 33.00
Cast iron car wheels	18.50 to 19.00
Heavy melting steel	15.25 to 15.75
Heavy shoveling steel	15.25 to 15.75
Frogs, switches and guards cut apart	19.00 to 19.50
Railroad springs	19.50 to 20.00
Heavy axles and tire turnings	13.00 to 13.50
No. 1 locomotive tires	17.50 to 18.00
Per Net Ton	
Steel angle bars	16.50 to 17.00
Steel car axles	18.75 to 19.25
Iron car axles	25.50 to 26.00
Wrought iron bars and transoms	19.00 to 19.50
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	13.50 to 14.00
Cast iron borings	11.25 to 11.75
No. 1 busheling	12.00 to 12.50
No. 1 railroad cast	16.00 to 16.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	15.25 to 15.75
Machine shop turnings	8.00 to 8.50
Champion bundled sheets	9.50 to 10.00

Borings, Turnings and Heavy Melting Scrap Decline

DETROIT, Sept. 15.—Blast furnace materials registered a decline of 25c. to 50c. per ton during the past week, due principally to the high production of these materials with melters keeping stocks low and no large purchases developing. Employment in Detroit is 20 per cent above the same period a year ago and approximately at the high point for the year. Automobile production is carrying along at the high August rate.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$14.25 to \$14.75
Borings and short turnings	11.50 to 12.00
Long turnings	10.50 to 11.00
No. 1 machinery cast	15.00 to 16.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	13.75 to 14.25
Stove plate	12.50 to 13.00
No. 1 busheling	12.75 to 13.25
Sheet clippings	9.00 to 10.00
Flashings	12.00 to 12.50

Buffalo

Inquiries for 7500 Tons of Pig Iron with Prices Stronger—Scrap Soft

BUFFALO, Sept. 15.—Approximately 7500 tons of pig iron is under negotiation by foundries and furnaces, but 2500 tons of foundry will probably not come to this district. Another large inquiry, calling for 1000 tons of foundry, has been issued by a New York State melter. Two or three inquiries for 700 to 750 tons have also appeared. Merchant furnaces are making a determined effort to get \$19 base, Buffalo, more firmly established and are successful in many cases. Iron at \$18.50 is still to be had, but the disposition to cut is not so prevalent as heretofore. Furnace operations are unchanged. The active Wickwire-Spencer furnace, one day last week, broke its production record with an output of 619 tons.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil.	1.75 to 2.25	\$18.50 to \$19.00
No. 2X foundry, sil.	2.25 to 2.75	18.50 to 19.00
No. 1 foundry, sil.	2.75 to 3.25	19.00 to 19.50
Malleable, sil. up to 2.25		18.50
Basic		18.50
Lake Superior charcoal		29.28

Finished Iron and Steel.—The warehouse price on steel reinforcing bars has been dropped by at least one seller to 2.65c., though 2.265c. base, Buffalo, is still being adhered to on mill orders. The Fairmont creamery, requiring 400 tons, has been placed and about 50 tons of road work was closed during the week. Potter County, Pa., roads to be let immediately, call for 600 tons. The Chamber of Commerce Building, Rochester, N. Y., 50 tons, has been awarded. One structural fabricator reports the closing of a 100-ton contract for a Franklinville, N. Y., school and a 175-ton contract for Black Rock market. Carbon steel bars are firm at 2.265c. and shapes at 2.165c., base Buffalo.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 3.80c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.45c.; cold rolled shapes, 4.40c.; cold rolled rounds, 3.95c.; wire nails, 4c.; black wire, 4.05c.

Old Material.—The market has shown a softening tendency since the last sizeable purchase here, recorded in the last issue. No buying of tonnage is being done and the market outside, which has been holding well, has weakened. Observers see further weakness immediately ahead. Machine shop turnings have declined 50c. to \$12 to \$12.50. There has been a little buying of low phosphorus at \$20 to \$20.50. Short rails and angle bars, malleable at \$19.50 to \$20, and stove plate at \$15.50 have also figured in the selling. Cast scrap is very weak.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	\$18.00 to \$18.50
Low phosphorus	20.00 to 20.50
No. 1 railroad wrought	16.50 to 17.00
Car wheels	16.50 to 17.50
Machine shop turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	16.50 to 17.00
Stove plate	15.50
Grate bars	14.50 to 15.00
Hand bundled sheets	13.00 to 13.50
Hydraulic compressed	17.00 to 17.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	19.50 to 20.00
No. 1 cast scrap	17.00 to 17.50
Iron axles	26.00 to 27.00
Steel axles	20.00 to 20.50

Foundry Takes Group Life Insurance

The employees of the Dixie Brass & Foundry Co., Birmingham, Ala., have been offered group life insurance totaling approximately \$45,000, underwritten by the Metropolitan Life Insurance Co. Employer and employees jointly pay the premiums. Each worker who contributes to the plan is insured for \$500, which will be increased \$100 after each year of service up to a maximum of \$1,000. The policy guarantees the full amount of insurance in equal monthly installments for a stated period to any employee who becomes totally and permanently incapacitated before he is 60.

Philadelphia

Slight Gain in Steel Business—Pig Iron Quiet But Firmer—Scrap Weak

PHILADELPHIA, Sept. 15.—Unless the latter half of this month brings an increase in orders not now foreseen the September steel tonnage in this district will not greatly exceed the August bookings. The lack of large railroad buying is a disappointment to the mills, but the trade has not given up hope that there will be an improvement in that direction. The letting of a contract by the Pennsylvania Railroad for an office building at West Philadelphia, taking 5000 tons of steel, is the first move in the carrying out of the extensive program by that line for new terminal facilities, involving a total expenditure of about \$60,000,000.

Weakness in the scrap market is regarded in some quarters as a sign of a modification of views as to the extent of the expansion of steel plant activities this fall. While steel orders are increasing, especially at those Eastern mills which have had months of unsatisfactory operations, the absence of any marked enlargement of demand has found some reflection in scrap. Prices of a few grades are slightly lower. The scrap trade regards the setback as temporary and looks for a resumption of the advance shortly.

Pig Iron.—Higher prices of coke are causing more hesitancy among pig iron producers in quoting prices which have prevailed in the past few weeks. One furnace company has advanced its prices to \$21, furnace, for No. 2 plain and \$21.50 for No. 2 X. This is 50c. a ton higher than the general market; hence this company had taken no orders at the new prices up to today. There are indications, however, that other furnaces will go to the same level of prices. A little inquiry for first quarter foundry iron has appeared, but the furnaces are not much interested in quoting for that delivery with the coal and coke situation so uncertain. Sales in the past week have consisted of small lots for prompt shipment or to round out fourth quarter requirements. Transactions in low phosphorus iron have developed no price change.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.26 to \$21.63
East. Pa. 2X, 2.25 to 2.75 sil.	21.76 to 22.13
East. Pa. No. 1X.	22.26 to 22.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	23.67 to 29.17
Virginia No. 2X, 2.25 to 2.75 sil.	29.17 to 29.67
Basic delivery eastern Pa.	20.50 to 21.50
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	22.50 to 23.50

Ferroalloys.—Slightly more active demand for ferromanganese has come in the past week, some consumers not being covered for fourth quarter. The price of \$115, seaboard, is firm.

Billets.—Although concessions on billets have been rumored, a sale of 500 tons of forging quality to a local consumer brought the full market price of \$40, Pittsburgh. Rerolling billets are quoted at \$35, Pittsburgh.

Plates.—A moderate increase in the volume of plate tonnage has added very little to the strength of prices. On lots ranging from a carload up, quotations of 1.75c., Pittsburgh, are being made by Eastern mills, and in a few instances business has been closed on the basis of 1.70c., Pittsburgh. Mills maintain that the latter price is exceptional and that the proper market range is 1.75c. to 1.80c., Pittsburgh. Operations average about 50 per cent, or better.

Structural Material.—The McClintic-Marshall Co. will fabricate 5000 tons of steel for the Pennsylvania Railroad office building, the first unit of the improvement to be begun at West Philadelphia and to be continued until the road's terminal facilities have all been centered at that point. Considerable steel will be required in the entire program, which calls for an expenditure of about \$60,000,000. There are predictions that

September tonnage of structural steel will exceed that of any month this year. Firmer prices are also predicted, but little strength has developed in the past week. Sales are still being made at a range from 1.80c. to 1.90c., Pittsburgh, for large lots, but the lower quotation is not being made by all mills. Some adhere firmly to 1.90c., with 2c. for small lots.

Bars.—One large producer of steel bars has notified its customers that no orders, regardless of size, will be taken henceforth at less than 2c., Pittsburgh. Some other mills, while still naming 1.90c., are doing it less frequently. It is too early to say whether the 1.90c. quotation will be entirely eliminated, but strong efforts are being made to restore 2c. as a minimum. Bar iron is no stronger, quotations ranging from 2.12c. to 2.22c., Philadelphia.

Sheets.—Fewer sales of blue annealed at 2.25c., Pittsburgh, are being made, 2.30c. ruling on most transactions. On galvanized sheets some mills are firm at 4.30c., Pittsburgh, but concessions are still obtainable; likewise on black sheets the ruling quotation of 3.15c. is sometimes being shaded \$1 a ton.

Warehouse Business.—Demand for steel out of stock is fairly substantial. Prices quoted by local warehouses have not changed within the past week, for local truck delivery being as follows:

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), 3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ¼ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.80c. to 3c.; tank steel plates, ½ in., 3c.; blue annealed steel sheets, No. 10 gage, 3.35c.; black sheets, No. 28 gage, 4.35c.; galvanized sheets, No. 28 gage, 5.45c.; square, twisted and deformed steel bars, 3c.; structural shapes, 2.75c. to 2.90c.; diamond pattern plates, ¼ in., 5.30c.; ½ in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4.25c. base; steel bands, No. 13 gage to ½ in., inclusive, 3.90c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Imports.—Following are last week's imports at Philadelphia: Chrome ore from Portuguese Africa, 472 tons; iron ore from Sweden, 7510 tons; pig iron from India, 154 tons; pig iron from England, 1000 tons; manganese ore from British India, 7800 tons; structural steel from Luxemburg, 278 tons; structural steel from Germany, 22 tons; hoops from England, 37 tons.

Old Material.—Influenced somewhat by the recession in the Pittsburgh scrap market, but also affected by a modified view as to the probable extent of steel plant operations this fall, the Eastern scrap market has turned slightly weaker. The scrap trade regards the setback as temporary and is taking advantage of the present situation to fill contracts at better profits than could have been realized a week or two ago. Brokers in several instances have reduced their offering prices and there has been no mill buying of importance within the week to take up any of the slack. Heavy melting steel may still be quoted at \$17.50 because no sales have been made below that figure. Efforts of a mill to buy at \$17 have been unavailing, but so have efforts of brokers to obtain \$18.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	\$17.50
Scrap rails	17.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	21.50 to 22.00
Couplers and knuckles	21.00 to 21.50
Roller steel wheels	21.00 to 21.50
Cast iron car wheels	18.50 to 19.00
No. 1 railroad wrought	17.50 to 18.50
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	14.00 to 14.50
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine shop turnings (for steel works use)	14.00 to 14.50
Machine shop turnings (for rolling mill use)	14.50 to 15.00
Heavy axle turnings (or equivalent)	15.50 to 16.00
Cast borings (for steel works and rolling mill)	14.00
Cast borings (for chemical plant)	16.00 to 16.50
No. 1 cast	18.00 to 18.50
Heavy breakable cast (for steel plants)	17.00 to 17.50
Railroad grate bars	14.50 to 15.00
Stove plate (for steel plant use)	14.50 to 15.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.50 to 17.00
Shafting	24.00 to 25.00
Steel axles	24.50 to 25.50

Cleveland

Heavier Steel Buying—A 100,000-Ton Ore Sale—Pig Iron Is Stronger

CLEVELAND, Sept. 15.—The volume of steel business in this territory continues good and some of the mills report an increase in bookings over the previous two or three weeks. Various consumers of steel bars, plates and structural material who have been buying only for immediate requirements are placing orders more freely, and there is more disposition to cover for last quarter requirements. Many feel that prices will not go lower during the remainder of the year. A number of bolt and nut manufacturers and makers of screw stock have contracted for steel bars for the fourth quarter. The price situation shows little change. Some large producers are holding to 2c., Pittsburgh, for steel bars, although sales are still made at 1.90c. However, on a round-lot inquiry several mills quoted 2c., while the quotation of one producer figured 1.98c., Pittsburgh. On plates 1.80c., Pittsburgh, has become the common quotation and some fourth quarter contracts have been placed at that price. The 1.90c. quotation has almost disappeared as a carload price. Structural material ranges from 1.90c. to 2c., with the lower price the more common. Weakness has developed in screw stock with concessions of \$2 or more a ton from the regular quotation of 2.55c., Cleveland. The demand for hot and cold rolled strip steel in the automotive trade is good and quotations are firmly held. New inquiry in the structural field is light. The outstanding award of the week was 3500 tons for a Toledo hotel.

Pig Iron.—A 50c. advance to \$19 has been made by Valley makers on foundry and malleable pig iron for the fourth quarter. While some \$18 quotations are outstanding producers are apparently holding to the higher price on all new inquiries. The Cleveland market is 50c. a ton higher for outside shipment. One producer who has been on an \$18.50 basis for some time is trying to get up to \$19.50 and has taken a 1000-ton lot of foundry iron at \$19.25 for outside delivery. Another is quoting \$19 for outside shipment. For Cleveland delivery the price is unchanged at \$19.50 at furnace, but if the Valley furnace price becomes firmly established at \$19, the price for local delivery will probably be advanced 50c. a ton. With the gain in strength of foundry iron it is claimed that \$18.50, Valley furnace, is now the minimum quotation on basic iron. A Canton company which inquired for 10,000 tons of basic iron for the first quarter has bought that amount, but took it for the fourth quarter instead. The price is understood to have been \$18, Valley furnace. One lake furnace has not changed its quotation of \$20 to \$20.50 for foundry and malleable iron. The low Valley price as compared with some of the lake furnace prices has enabled Valley producers to take some business outside of their immediate territory and for shipment to points where they have the freight disadvantage. One lake furnace during the week lost several lots of iron totaling approximately 2000 tons in western Ohio, to Valley furnaces, although it had a considerably lower freight rate. Sales during the week by Cleveland interests aggregate about 25,000 tons. Furnaces are still refusing to quote for the first quarter, but are talking of an advance of 50c. to \$1 a ton above present prices for that delivery. Low phosphorus iron, long quiet, has become fairly active. A Valley producer has sold 2000 tons in small lots in the past few days at \$27.50, furnace. Little effort is being made to meet the higher price on this grade.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 from Birmingham:

Basic, Valley furnace	\$18.00 to \$18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.00
Southern fdy., sil. 1.75 to 2.25	24.01 to 25.51
Malleable	20.00
Ohio silvery, 8 per cent.	29.02
Standard low phos., Valley furnace	27.50

Iron Ore.—The United States Steel Corporation has placed a contract for manganiferous ore, calling for 100,000 tons as a minimum amount. The 100,000 tons will go to the Gary works of the Illinois Steel Co. and additional ore may be taken under the contract for shipment to other plants. Usually the Steel Corporation depends on its own mines for its entire ore requirements, but its production of manganiferous ore is limited and this round lot purchase indicates a decision to use more of that grade in its mixture. The market generally shows more activity than since the early part of the season. One buyer, during the past few days, placed 50,000 tons and another 35,000 tons, largely manganiferous ore, and inquiries now pending aggregate 100,000 tons or more. As the shipping season will be virtually over in 60 days, consumers realize that they must not delay much longer in placing contracts for whatever ore they may need during the winter. Late sales have been made at regular prices and it is claimed that the weakness of the early part of the season is no longer in evidence. The dock balance of ore on Sept. 1, at Lake Erie ports was 6,333,420 tons, as compared with 6,454,724 tons on the same date a year ago. Receipts at Lake Erie ports during August were 6,228,144 tons and for the season until Sept. 1, 24,660,329 tons, as compared with 20,183,830 tons during the corresponding period a year ago. Shipments from Lake Erie ports during September were 4,158,185 tons, and for the season until Sept. 1, 18,055,199 tons, as against 15,271,914 tons for the corresponding period last year.

Semi-Finished Steel.—Youngstown mills are quoting large billets and slabs at \$33.50, Youngstown, but this price has failed to take some Ohio business in competition with producers having a freight advantage and quoting a mill base. On sheet bars the asking price is \$35, Youngstown, but no sales are reported, and it is believed that a definite inquiry would bring out a quotation of \$33.50. A Cleveland mill is quoting sheet bars, billets and slabs at \$35, either Cleveland or Youngstown. Sheet bars are in good demand, but most shipments are on contracts carried over from the second quarter.

Sheets.—While the market as a whole shows a firmer tendency, galvanized sheets are still available at 4.20c., base Pittsburgh, for prompt shipment, although some business for the remainder of the year has been taken for 4.30c. Black sheets are holding rather firmly at 3.15c., but 3.10c. is still in evidence. Blue annealed sheets range from 2.25c. to 2.30c. Demand for sheets is growing, but consumers as a rule are covering only for early requirements.

Reinforcing Bars.—An inquiry is out for several hundred tons for the superstructure of the Ohio Bell Telephone Co. Building, Cleveland, and for 200 tons for a warehouse for the Malbin Realty Co., Cleveland. Small lots are in good demand. Rail steel bars are unchanged at 1.75c. to 1.80c.

Warehouse Business.—Warehouse business, which has been good for some time, is expanding. Sheets are particularly active. Warehouse prices on sheets are holding at the recent reductions, but shading of \$2 a ton is still reported on steel bars, plates and structural material.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.80c.; No. 28 galvanized sheets, 4.95c.; No. 10 blue annealed sheets, 3c.; cold-rolled rounds and hexagons, 3.80c.; flats and squares, 4.30c.; hoops and bands, 3.85c.; No. 9 annealed wire, \$3 per 100 lb.; No. 9 galvanized wire, \$3.45 per 100 lb.; common wire nails, \$3 base per 100 lb.

Fluorspar.—The domestic fluorspar market is firm, although not active, and a few sales are reported at \$16 for the gravel grade.

Bolts, Nuts and Rivets.—Following the announcement that present prices would be continued through the fourth quarter many consumers placed contracts for that delivery. The Ford Motor Co. has purchased a large quantity of nuts during the past few days and the demand for bolts and nuts from other automobile companies is holding up well. However, manufacturers

(Continued on page 785)

NON-FERROUS METALS

The Week's Prices

		Cents per Pound for Early Delivery			
		Straits Tin (Spot)		Lead	
		Copper, New York	Electro-lytic*	New York	St. Louis
Sept.	Lake				
9.....	14.75	14.37 1/2	57.20	9.60	9.25
10.....	14.75	14.37 1/2	57.62 1/2	9.60	9.25
11.....	14.87 1/2	14.50	58.25	9.60	9.25
12.....	14.87 1/2	14.50	58.25	9.60	9.25
14.....	15.00	14.62 1/2	58.37 1/2	9.60	9.25
15.....	15.00	14.62 1/2	58.50	9.60	9.25

*Refinery quotation; delivered price 1/4c. higher.

New York

NEW YORK, Sept. 15.

While there is no outstanding activity in non-ferrous metals, prices are strong. Copper is slightly higher. Consumer buying of tin has been fairly good and the price is up. Lead maintains its position of a week ago, while zinc is fractionally higher.

Copper.—As most of the larger consumers are covered for the remainder of this month and some through October, there has been no large buying of copper, but a fair day-to-day business, together with a strong statistical position and advances in London, contribute to price firmness here, with a slightly upward trend. Very little electrolytic copper was available today at 14.75c. delivered, most of the producers asking 14.87 1/2c. per lb. Foreign demand has dropped off somewhat, possibly due to our high prices. Ordinarily about one-quarter of our copper production goes abroad, but recent orders have scarcely exceeded 10 per cent of the output.

Tin.—Business in tin was in good volume all of last week, but there was very little activity on Monday and Tuesday of this week. The total sales in the calendar week from Monday to Saturday were about 900 tons, and little has been added this week. Consumers were more active than dealers in last week's buying, some of the largest consumers taking substantial lots for October and beyond. Spot Straits tin in stock in New York is very tightly held, one factor contributing to this situation being the late arrivals of ships and the fact that other ships due to arrive soon will probably also be in later than expected. There is a good supply of 99 per cent tin in storage in New York, but there is little demand for it, although it can be bought about 2c. per lb. below the price of Straits tin. The latter, however, is wanted by most consumers. London prices today were £258 2s. 6d. for spot standard, £260 12s. 6d. for future standard, £265 2s. 6d. for Straits tin. The Singapore price was £265 5s.

Lead.—The American Smelting & Refining Co. continues its price of 9.50c., New York, on lead, but this is available only to its regular customers. In the outside market the quotation is 9.60c., New York. The market is quiet and drifting, but there is an undertone of firmness.

Zinc.—The market is strong because of increasing demand from galvanizers and the expectation of foreign demand. The price is slightly higher at 7.75c., St. Louis, or 8.10c., New York.

Antimony.—Quotations are firm at 17.12 1/2c. to 17.25c., New York, for spot delivery of Chinese metal, with later arrivals quoted at 16.75c. to 17c., duty paid.

Old Metals.—The market is stronger. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	14.25
Copper, heavy and wire	13.25
Copper, light and bottoms	11.75
Heavy machine composition	10.25
Brass, heavy	8.75
Brass, light	7.75
No. 1 red brass or composition turnings	9.75
No. 1 yellow rod brass turnings	9.50
Lead, heavy	8.50
Lead, tea	7.00
Zinc	5.25
Cast aluminum	20.50
Sheet aluminum	20.50

Nickel.—Ingot nickel in wholesale lots is quoted at 34c. with shot nickel 35c., while electrolytic, 99.75 per cent, is quoted at 38c.

Aluminum.—Aluminum remains at 27c. to 28c. per lb. for the virgin metal, delivered.

Chicago

SEPT. 15.—Copper and zinc have advanced slightly under a fair demand. Lead has declined as a result of restricted future buying. Antimony and tin remain unchanged. The old metal market is steady and prices remain the same. We quote, in carload lots: Lake copper, 14.87 1/2c.; tin, 59c.; lead, 9.40c.; zinc, 7.80c.; in less than carload lots, antimony, 19c. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 10c.; red brass, 9c.; yellow brass, 7.75c.; lead pipe, 8c.; zinc, 4.50c.; pewter, No. 1, 32.50c.; tin foil, 41c.; block tin, 46c.; all buying prices for less than carload lots.

VALLEY PIG IRON RATE

Shenango Furnaces Want a Lower Freight to the Canton-Akron District

PITTSBURGH, Sept. 14.—Hearing was given by the local railroad freight rate committee this morning to pig iron producers in the Shenango Valley district, who are seeking equal treatment as to pig iron freight rates with Cleveland and Mahoning Valley producers on shipments to Canton, Akron and adjacent points in Ohio. Representatives of the Shenango Furnace Co., the Sharpsville Furnace Co., and the Reliance Coke & Furnace Co., all having furnaces in Sharpsville, Pa., were heard and requested that the rate from that and other points in the Shenango Valley be the same to the Ohio points mentioned as from Mahoning Valley points and, for the past few months, ruling from Cleveland, or \$1.26 per gross ton. At present, the rate over most lines from the Shenango Valley to the Canton-Akron district is \$1.76. The committee merely took testimony; the executives of the railroads affected will decide. It seems that the extension of the Mahoning Valley rate to cover the Shenango Valley district is something that the railroads are empowered to make without first getting the approval of the Interstate Commerce Commission.

It was contended by those seeking the change that they are penalized to the extent of 50c. per ton in competition for the business of the Ohio area, which amounts to at least 50,000 tons annually, and that the railroads would lose no revenue by granting the request for the extension of the \$1.26 rate to the Shenango Valley. The low rate now in effect from Cleveland would naturally divert a large part of the pig iron tonnage to Cleveland and the railroads would lose the revenue on such iron ore as enters into the tonnage that passes to Cleveland. The furnace men emphasized that they do not seek to jeopardize the group rate structure, but are acting in self-defense, pointing out that the present rates protect the Cleveland producers from outside competition in their own territory and give them an advantage at the expense of the Shenango Valley producers in the Canton-Akron district, which melts a very substantial tonnage. Speakers also stressed the need of preserving competitive markets, pointing out that they are now confined to a much smaller radius for distribution than ever before.

To Confer with Machinery Manufacturers on Exports

WASHINGTON, Sept. 12.—W. H. Rastall, chief industrial machinery division of the Bureau of Foreign and Domestic Commerce, left today for Cleveland, Sandusky and Pittsburgh to consult with manufacturers of those cities relative to their export problems. Firms interested can arrange a conference with Mr. Rastall by communicating with the foreign trade secretaries of chambers of commerce in those cities.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....1.80c. to 1.90c.
F.o.b. Chicago, base, per lb.....2.10c.

Structural Shapes

F.o.b. Pittsburgh mill, base, per lb.....1.90c. to 2c.
F.o.b. Chicago, base, per lb.....2.10c.

Iron and Steel Bars

Soft steel bars, f.o.b. P'gh mills, base, per lb....1.90c. to 2c.
Soft steel bars, f.o.b. Chicago, base, per lb.....2.10c.
Reinforcing steel bars, f.o.b. P'gh mills, per lb....1.90c. to 2c.
Rail steel bars, f.o.b. Chicago and f.o.b. Chicago district mills, base, per lb.....2.00c.
Common iron bars, f.o.b. Chicago, base, per lb....1.90c. to 2.00c.
Refined iron bars, f.o.b. P'gh mills, base, per lb.....3.00c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base (6 in. and narrower), per lb., Pittsburgh..2.40c.
Bands, base (6 in. and narrower), per lb., Pittsburgh..2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh....2.40c.
Strips, wider than 6 in., base, per lb., Pittsburgh....2.20c.
Strips, 6 in. and narrower, Chicago.....2.40c. to 2.50c.
Strips, wider than 6 in., Chicago.....2.30c. to 2.40c.
Cotton ties, per 45 lb. bundle, f.o.b. Atlantic ports.....\$1.28
Cotton ties, per 45 lb. bundle, f.o.b. Gulf ports.....1.25

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.50c.
Screw stock and shafting, f.o.b. Chicago, base, per lb..2.50c.
Screw stock, base, per lb., Cleveland.....2.55c.
Shafting, ground, f.o.b. mill, base, per lb.....2.80c. to 3.00c.
Strips, f.o.b. P'gh mills, base, per lb.....3.75c.
Strips, f.o.b. Cleveland mills, base, per lb.....3.75c.
Strips, delivered Chicago, base, per lb.....4.05c.
Strips, f.o.b. Worcester mills, base, per lb.....3.90c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....\$2.65
Galvanized nails, 1-in. and longer, base plus.....2.00
Galvanized nails, shorter than 1 in., base plus.....2.25
Bright plain wire, base, No. 9 gage, per 100 lb.....2.50
Annealed fence wire, base, per 100 lb.....2.65
Spring wire, base, per 100 lb.....3.50
Galvanized wire, No. 9, base, per 100 lb.....3.10
Galvanized barbed, base, per 100 lb.....3.35
Galvanized staples, base, per keg.....3.35
Painted barbed wire, base, per 100 lb.....3.10
Polished staples, base, per keg.....3.10
Cement coated nails, base, per count keg.....1.85
*Bale ties, carloads, to jobbers...75, 15 and 5 per cent off list
*Bale ties, carloads, to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....\$65
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant, and Duluth, Minn., mills \$2 a ton higher; Anderson, Ind., \$1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.25c. to 2.30c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills, 2.40c. to 2.45c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.10c. to 3.20c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.30c. to 3.35c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.20c. to 4.30c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..4.35c. to 4.40c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.10c. to 3.20c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.25c. to 3.40c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh.....4.25c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..4.60c. to 4.75c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills.....\$5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind.....5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....\$11.20	20-lb. coating I. C.....\$15.50
8-lb. coating I. C.....11.50	25-lb. coating, I. C.....17.00
15-lb. coating I. C.....14.35	30-lb. coating I. C.....18.35
	40-lb. coating, I. C.....20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb..\$2.40 to \$2.50
Large, f.o.b. Chicago, base, per 100 lb.....2.60 to 2.65
Small, f.o.b. Pittsburgh.....70, 10 and 5 per cent off list
Small, Cleveland70 and 10 to 70, 10 and 10 per cent off list
Small, Chicago70, 10 and 10 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....\$43.00
Rails, light, billet, base, per lb.....1.65c. to 1.70c.
Rails, light rail steel, base, per lb.....1.60c. to 1.65c.
Spikes, 1/2 in. and larger, base, per 100 lb.....\$2.80 to \$3.00
Spikes, 1/2 in. and smaller, base, per 100 lb.....3.00 to 3.25
Spikes, boat and barge, base, per 100 lb.....3.25
Track bolts, all sizes, base, per 100 lb.....3.90 to 4.25
Tie plates, per 100 lb.....2.35 to 2.40
Angle bars, base, per 100 lb.....2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Inches	Steel Black	Galv.	Inches	Iron Black	Galv.
1/2	45	19 1/2	1/4 to 3/8	+11	+39
3/4	51	25 1/2	1/2	22	2
1	56	42 1/2	3/4	28	11
1 1/4	60	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			

Lap Weld

2	55	43 1/2	2	23	7
2 1/2	59	47 1/2	2 1/2	26	11
7 and 8	56	42 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

Butt Weld, extra strong, plain ends

1/2	41	24 1/2	2 to 3	61	50 1/2
3/4	47	30 1/2	1/4 to 3/8	+11	+54
1	53	42 1/2	1/2	21	7
1 1/4	58	47 1/2	3/4	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

Lap Weld, extra strong, plain ends

2	53	42 1/2	2	23	9
2 1/2	57	46 1/2	2 1/2	29	15
4 1/2	56	45 1/2	4 1/2	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 1/2 point, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2 1/2 per cent beyond the above discount.

NOTE—The above discounts on steel pipe also apply at Lorain, Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel	Charcoal Iron
2 to 2 1/4 in.....27	1 1/2 in.....+18
2 1/4 to 2 3/4 in.....27	1 3/4 to 1 7/8 in.....+8
3 in.....40	2 to 2 1/4 in.....+2
3 1/4 to 3 3/4 in.....42 1/2	2 1/4 to 3 in.....+7
4 to 13 in.....46	3 1/4 to 4 1/2 in.....+9

Beyond the above discounts, 5 to 6 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes Cold Drawn

1 in.....60	3 in.....45
1 1/4 and 1 1/2 in.....52	3 1/4 to 3 1/2 in.....47
1 3/4 in.....36	4 in.....50
2 to 2 1/4 in.....31	4 1/2, 5 and 6 in.....45
2 1/2 and 2 3/4 in.....39	

Hot Rolled

2 and 2 1/4 in.....34	3 1/4 to 3 1/2 in.....50
3 1/2 and 2 3/4 in.....42	4 in.....53
3 in.....48	4 1/2, 5 and 6 in.....48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing (New List)

Carbon 0.10 to 0.30 base.....50 to 55 per cent off list
Carbon 0.30 to 0.40 base.....45 to 50 per cent off list
Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 51.50 per cent iron.....	\$4.55
Old range non-Bessemer, 51½ per cent iron.....	4.40
Mesaba Bessemer, 51.50 per cent iron.....	4.40
Mesaba non-Bessemer, 51.50 per cent iron.....	4.25
High phosphorus iron, 51.50 per cent.....	4.15
Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore	
Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus.....	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates.....	\$12.00 to \$13.00
Chrome ore, Indian basic, 48 per cent Cr ₂ O ₃ , crude, per ton, c.i.f., Atlantic seaboard...	20.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₃ , New York.....	65c. to 70c.

Coke and Coal (Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt.....	\$3.40 to \$3.75
Foundry coke, f.o.b. Connellsville prompt.....	4.25 to 5.00
Mine run steam coal, f.o.b. W. Pa. mines.....	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines.....	1.65 to 1.90
Mine run gas coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines.....	1.30 to 1.40
Gas slack, f.o.b. W. Pa. mines.....	1.50 to 1.70

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.....	\$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid.....	115.00
Ferrosilicon, 50 per cent, delivered.....	82.50 to 85.00
Ferrosilicon, 75 per cent.....	145.00 to 147.50
Ferrotungsten, per lb. contained metal.....	1.15 to 1.20
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered.....	11.50c.
Ferrovandium, per lb. contained vanadium	\$3.50 to \$4.00
Ferrocobaltitium, 15 to 18 per cent, per net ton.....	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....	\$32.00
Spiegeleisen, domestic, 16 to 19 per cent.....	31.00
Ferrosilicon, Bessemer, 10 per cent, \$33; 11 per cent, \$35; 12 per cent, \$37; electric furnace ferrosilicon, 10 per cent, \$38 furnace; 11 per cent, \$38; 12 per cent, \$39; 14 to 16 per cent, \$45.	
Silvery iron, 6 per cent, \$24; 7 per cent, \$25; 8 per cent, \$26; 9 per cent, \$27; 10 per cent, \$29; 11 per cent, \$31; 12 per cent, \$33.	

Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, gravel, per net ton, f.o.b. Illinois and Kentucky mines.....	\$16.00
No. 2 lump, per net ton.....	19.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton....	15.00 to 16.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines.....	32.50
Per 1000 f.o.b. works:	
Fire Clay	
Pennsylvania.....	High Duty \$43.00 to \$46.00 Moderate Duty \$40.00 to \$43.00
Maryland.....	48.00 to 50.00 43.00 to 45.00
Ohio.....	43.00 to 46.00 40.00 to 43.00
Kentucky.....	43.00 to 45.00 40.00 to 43.00
Illinois.....	43.00 to 45.00 40.00 to 43.00
Missouri.....	40.00 to 43.00 35.00 to 38.00
Ground fire clay, per ton.....	6.50 to 7.50
Silica Brick:	
Pennsylvania.....	40.00
Chicago.....	49.00
Birmingham.....	54.00
Silica clay, per ton.....	8.00 to 9.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....	40.00
Chrome Brick:	
Standard size, per net ton.....	48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)	
Machine bolts, small rolled threads, .60 and 10 per cent off list	
Machine bolts, all sizes, cut threads, 50, 10 and 10 per cent off list	
Carriage bolts, smaller and shorter, rolled threads, 50, 10 and 10 per cent off list	
Carriage bolts, cut threads, all sizes, 50 and 10 per cent off list	
Eagle carriage bolts.....	.65 and 10 per cent off list
Lag bolts.....	.60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads.....	.50 and 10 per cent off list
Other style heads.....	.20 per cent extra

Machine bolts, c.p.c. and t. nuts, ¾ x 4 in.,

Larger and longer sizes.....	45, 10 and 5 per cent off list
Hot-pressed nuts, blank and tapped, square.....	4c. off list
Hot-pressed nuts, blank or tapped, hexagons.....	4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.10c. off list
Bolt ends with hot pressed nuts.....	.50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts.....	.45, 10 and 5 per cent off list
Washers.....	.650c. to 6.25c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:	
¾ in. and smaller, U. S. S.....	.80 and 5 per cent off list
¾ in. and larger, U. S. S.....	.75 and 5 per cent off list
Small sizes, S. A. E.....	.80, 10 and 5 per cent off list
S. A. E., ¾ in. and larger.....	.75, 10 and 5 per cent off list
Stove bolts in packages.....	.80, 10 and 5 per cent off list
Stove bolts in bulk.....	.80, 10, 5 and 2½ per cent off list
Tire bolts.....	.50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)
(To jobbers and consumers in large quantities)

Per 100 Net		Per 100 Net	
S. A. E.	U. S. S.	S. A. E.	U. S. S.
¾-in.	\$0.44 \$0.44	¾-in.	\$2.35 \$2.40
¾-in. ....	.515 .515	¾-in.	3.60 3.60
¾-in. ....	.62 .66	1-in.	5.65 5.80
¾-in. ....	.70 .90	1¼-in.	8.90 8.90
¾-in.	1.01 1.05	1½-in.	12.60 12.10
¾-in.	1.38 1.42	1¾-in.	18.35 18.35
¾-in.	1.70 1.73	1½-in.	21.00 21.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....	.80, 10 and 5 per cent off list
Milled standard set screws, case hardened, 80 and 10 per cent off list	
Milled headless set screws, cut thread, 80 and 10 to 80 per cent off list	
Upset hex. head cap screws, U. S. S. Thread, 80, 10, 10 and 5 per cent off list	
Upset hex. cap screws, S. A. E. Thread, 80, 10 and 5 per cent off list	
Upset set screws.....	.80, 10 and 10 per cent off list
Milled studs.....	.75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.....	\$33.50 to \$35.00
Forging billets, ordinary.....	40.00
Forging billets, guaranteed.....	45.00
Sheet bars.....	35.00
Slabs.....	\$33.50 to 35.00
*Wire rods, common soft, base No. 5 to ¾-in.	45.00
Wire rods, common soft, coarser than ¾-in.	\$2.50 over base
Wire rods, screw stock.....	\$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40.....	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.....	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.....	7.50 per ton over base
Wire rods, carbon over 0.75.....	10.00 per ton over base
Wire rods, acid.....	15.00 per ton over base
Skelp, grooved, per lb.....	1.90c.
Skelp, sheared, per lb.....	1.90c.
Skelp, universal, per lb.....	1.90c.

*Chicago mill base is \$46. Cleveland mill base, \$45.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E.	Series	Bar
Numbers		100 lb.
2100*	(¾% Nickel, 10 to 20 per cent Carbon)...	\$3.00 to \$3.25
2300	(3% Nickel).....	4.50 to 4.75
2500	(5% Nickel).....	5.75 to 6.00
3100	(Nickel Chromium).....	3.50 to 3.65
3200	(Nickel Chromium).....	5.00 to 5.25
3300	(Nickel Chromium).....	7.50 to 7.75
3400	(Nickel Chromium).....	6.25 to 6.50
5100	(Chromium Steel).....	3.25 to 3.50
5200*	(Chromium Steel).....	7.50 to 8.00
6100	(Chromium Vanadium bars).....	4.25 to 4.50
6100	(Chromium Vanadium spring steel).....	4.00 to 4.25
9250	(Silicon Manganese spring steel).....	3.25 to 3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium).....		4.00 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium).....		4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum).....		4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum).....		3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum).....		4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

PERSONAL

Harry F. Wahr, vice-president Mesta Machine Co., Pittsburgh, has been elected president, succeeding the late Frederick E. Mesta. He has been associated with the company for 22 years and before his election as vice-president last May he had been secretary and sales manager. J. O. Horning, treasurer, and Lorenz Iversen, chief engineer, have been elected vice-presidents and John Edwards becomes assistant treasurer. The vacancy in the board of directors created by the death of Frederick E. Mesta has been filled by the election of Mrs. Pearl R. Mesta, widow of the late George Mesta.

Eugene H. Heald has been appointed Western division contracting manager of the American Bridge Co. in Chicago, succeeding Francis J. Llewellyn, who died July 25 of this year. Mr. Heald, during his connection of about 20 years with the American Bridge Co., has been a contracting manager of the company in New York and was connected with the Richmond, Va., office of the company for several years. For the past few years he has been assistant Western division contracting manager at Chicago.

James H. Foote, recently appointed district sales agent at Cincinnati for the Bethlehem Steel Co., has been transferred to the company's bar division at Bethlehem, Pa. He will be succeeded in Cincinnati by John H. Richards, who has been associated with the Buffalo office.

E. B. Stanley has been named president of the American Laundry Machinery Co., Cincinnati. Mr. Stanley has been vice-president and secretary and will fill the vacancy caused by the death of Robert M. Burton.

A. L. Luria, president Luria Brothers & Co., Reading, Pa., scrap dealers and brokers, has returned from a European trip. He was gone about two months.

Leigh B. Morris, until recently Pacific Coast manager of sales of the Bethlehem Steel Corporation, has returned to New York, his former home, but will again take up his residence in San Francisco about Jan. 1.

Bernard Eberlin will continue under his own name the business of the firm of Filley & Eberlin, which was dissolved Aug. 31. In addition to being Eastern sales agent for the Superior Steel Co., Canton, Ohio, he will act as representative of the American Zinc Products Co., Greencastle, Pa.; Chicago Perforating Co., Chicago; Henry A. Taubensee & Co., Chicago. Mr. Eberlin was associated with the Merchant & Evans Co., New York, from 1910 to 1917 and rejoined the firm after his service in France as a captain of infantry during the war. He joined with M. L. Filley to organize the firm of Filley & Eberlin in August, 1921.

George R. LeSavage has resigned as president and general manager of the Solar-Sturges Mfg. Co., Chicago, and Lee Sturges has been elected to succeed him as president. Mr. LeSavage, who will remain a director of the company, is returning to the East to take up a line of work long contemplated.

Dan M. Rugg, president Eastern States Blast Furnace and Coke Oven Association, who recently resigned as superintendent of the Donner-Hanna Coke Corporation, Buffalo, is now in Europe on a vacation trip. On his return he will locate in Pittsburgh with the Kopfers Co.

Kenneth M. Rhoades, who has been in the sales department of the Harrisburg Pipe & Pipe Bending Co.,

Harrisburg, Pa., as assistant to H. W. Bishop, Jr., manager of sales, has severed that connection to go with the Tacony Steel Co., Philadelphia, as assistant to W. C. Prendergast, vice-president in charge of sales.

L. M. Zimmer has been appointed general sales manager of the Linde Air Products Co., New York, manufacturer of oxygen, and of the welding gas division of the Prest-O-Lite Co., manufacturer of dissolved acetylene, succeeding L. M. Moyer, who resigned Aug. 1. Mr. Zimmer entered the employ of the Linde company nine years ago as junior salesman.

Howard Coonley, Walworth Mfg. Co., Boston, has accepted the appointment as chief of the First Chemical Warfare District. It is Mr. Coonley's duty to mobilize industry in his district for the manufacture of gas masks and other chemical warfare material on short notice in case of war. There are four other districts, with headquarters in New York, Pittsburgh, Chicago and San Francisco. During the war Mr. Coonley was vice-president of the Shipping Board, United States Emergency Fleet Corporation.

Dr. William O. Hotchkiss, since 1909 Director of the State Geological and Natural History Survey, Wisconsin, and ex-officio member of the Wisconsin State Highway Commission, has resigned to accept the presidency of the Michigan School of Mines at Houghton. Dr. Hotchkiss is 47 years of age, a native of Wisconsin and a graduate of the University of Wisconsin.

George Vits, president Aluminum Goods Mfg. Co., Manitowoc, Wis., was elected president of the Wisconsin Manufacturers' Association at the annual meeting in Milwaukee on Sept. 3. Walter J. Kohler, president Kohler Co., Kohler, was elected vice-president; George F. Ingersoll, general manager Fairbanks-Morse & Co., Beloit, treasurer, and George F. Kull, Madison, was re-appointed executive secretary. The board of directors includes Gen. Otto H. Falk, president Allis-Chalmers Mfg. Co., and vice-president Falk Corporation, Milwaukee.

Walter J. Munro has been elected vice-president of the Osborn Mfg. Co., Cleveland, and will have charge of sales of the household brush division. He has been in charge of the Cleveland office of MacManus, Inc., a national advertising agency.

Philip S. Savage, formerly superintendent of coke ovens, By-Products Coke Corporation, Chicago, has returned to the Donner-Hanna Coke Corporation, Buffalo, as superintendent of operations, succeeding D. M. Rugg, recently resigned.

John T. Llewellyn, formerly vice-president, has succeeded his brother, the late Silas J. Llewellyn, as president of the Chicago Malleable Castings Co. Paul Llewellyn and James S. Llewellyn were elected vice-president and treasurer and vice-president and secretary, respectively.

G. W. Knight, chief engineer Atlas Steel Co., Dunkirk, N. Y., has resigned and will become general manager of the Pennsylvania Salt Co., Natrona, Pa.

D. A. Healy, during the past 21 years associated with the Boston office of Alley & Page, Inc., has severed his connection with that firm. He has made no plans for the immediate future.

Norton A. Mears has been appointed general manager Chicago Forging & Mfg. Co., 2000 Southport Avenue, Chicago, succeeding the late John Kimball Saville. Mr. Mears is experienced in railroad and commercial work, manufacturing and industrial engineering practice.

OBITUARY

THOMAS H. RUSSELL, vice-president and director of the American Fork & Hoe Co., Cleveland, manufacturer of agricultural tools, since its organization in 1902, died at the Akron City Hospital, Akron, Ohio, Sept. 9, following an operation. Previously he was an official of the Withington & Cooley Mfg. Co., Jackson, Mich., maker of farm and garden tools. His first connection with the American Fork & Hoe Co. was as manager of its Geneva, Ohio, plant and he remained in this capacity until 1918, when he retired because of ill health.

EDWARD PERKINS SELDON, president Erie City Iron Works, Erie, Pa., died at the Hamot Hospital in that city Sept. 11, following an operation. He was one of the city's most prominent business men and was a director of the Erie Trust Co. and the Mutual Telephone Co.

PAUL AFFORDBY ROCHESTER, great-grandson of Col. Nathan Rochester, founder of the city of Rochester, N. Y., died Sept. 11 at Arlington, Vt., aged 68 years. He was vice-president of the Arlington Refrigerating Machinery Co. and was known as an authority on transportation problems.

THOMAS B. LYNCH, aged 67, for 22 years connected with the firm of Lynch & Van Orman, Canandaigua, N. Y., machinists and founders, died on Sept. 10.

LLEWELLYN W. JORDAN, general office manager for the Pittston Stove Works, Pittston, Pa., died at his home in that city Sept. 6. He was born in Pittston in 1889 and since graduation from the local high school 19 years ago, had been connected with the Pittston Stove Works.

A. W. DOWD, member of the firm of Judge & Dowd, San Francisco, Eastern mill representatives, died Sept. 3, at the age of 49, at his residence in Burlingame, Cal. Mr. Dowd was for many years connected with the Pacific Hardware & Steel Co. and upon its merger with the Baker, Hamilton & Pacific Co., he resigned and represented several Eastern manufacturers in San Francisco. Three years ago he formed a partnership with J. W. Judge, representing the Peerless Drawn Steel Co., Apollo Steel Co., Allegheny Steel Co., Donner Steel Co., S. Severance Mfg. Co., West Virginia Rail Co., and other Eastern companies.

LOUIS SACKS, president Louis Sacks, Inc., which operated the Newark Malleable Iron Works, Newark, N. J., and several other enterprises, died Sept. 11 at Long Branch, N. J., after an illness of about ten days. He was born in Baltimore in 1852 and began the manufacture of hardware specialties in 1881. A few years later he engaged in the gray iron and malleable foundry industry, with which he had been connected for nearly half a century. Mr. Sacks is survived by a son, Louis Sacks, Jr., who was associated with him in the business.

B. B. NEAL, president Commonwealth Hardware Co., New York, who has been associated with hardware activities for nearly 35 years, died Sept. 13. He was founder of the Neal & Scott Co., the Commonwealth Hardware Co. and other similar organizations.

"The Physical Side of Concentration in Boilers," a paper read by Roger W. Andrews, Andrews-Bradshaw Co., Pittsburgh, before the National Electric Light Association, has been reprinted by the company for distribution among those interested. The paper contains information of interest to users of steam.

COKE WAGES NOT RAISED

Independent Connellsville Producers Find Labor Plentiful

PITTSBURGH, Sept. 14.—The report published in Cleveland that independent coal and coke operators in the Uniontown district were raising wages is without foundation. As is well known to all interested, the present independent scales for day labor range from \$4.50 to \$5, not \$3.50, as stated in this report, and the H. C. Frick Coke Co. scale calls for \$7.50 per day, instead of \$5.50, as this report had it.

For a time recently when the H. C. Frick Coke Co. was putting into operation some 2000 coke ovens, there was a good deal of shifting of the workmen from independent operations to the Frick plants to secure the higher compensation obtainable at these plants. But that company could not provide work for all and most of the men drifted back to the independent plants.

The labor supply of the Connellsville district is quite ample for much fuller operations than that district now is enjoying and independent companies which recently have started up idle capacity in response to the larger demands for soft coal and for coke for heating and domestic purposes incident to the anthracite mine suspension have experienced no difficulty in securing full complements of men at the independent wage scales, which are about 30 per cent below those paid by the Frick company.

The Frick company is a subsidiary of the Steel Corporation and is governed by its wage policy as are all other subsidiaries. The scale now observed by the Frick company was established late in August, 1922.

Cleveland Iron and Steel Market

(Concluded from page 780)

would like more orders. Rivets are dull and weak. For carlot business \$2.40, Cleveland mill, appears to be the common price for large rivets.

Coke.—The foundry coke market is very firm, with higher prices on some of the standard brands. Quotations range from \$4.75 to \$5, the latter for premium grades, and good coke is apparently no longer available below \$4.75. An Ohio maker of by-product coke has adopted the Ashland plan of making contracts with a price fixing clause under which the price for each month is named on the 25th of the previous month and the buyer has the privilege of canceling if he does not regard the price right. Many consumers have placed fourth quarter contracts on this basis. For prompt shipment Ohio by-product coke has advanced 50c, a ton to \$7, Painesville. Heating coke is firmer, ranging from \$3.50 to \$3.75.

Old Material.—A Cleveland consumer during the week purchased small lots of blast furnace and open-hearth scrap, paying \$15 delivered for borings and turnings and \$18 for heavy melting steel, and to obtain material to fill the orders dealers are paying 50c. over those prices. Generally the market is dull, with prices holding fairly steady, although borings and turnings lack strength. Heavy melting steel has sold at \$18 near the Valley consuming district, but this was distress material and the price did not represent the market.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	\$17.00 to \$17.50
Rails for rolling	17.00 to 17.50
Rails under 3 ft.	19.00 to 19.50
Low phosphorus melting	18.00 to 18.25
Cast iron borings	14.00 to 14.25
Machine shop turnings	13.00 to 13.25
Mixed borings and short turnings	14.00 to 14.25
Compressed sheet steel	15.50 to 15.75
Railroad wrought	13.50 to 14.00
Railroad malleable	19.00 to 19.50
Light bundled sheet stampings	12.00 to 12.25
Steel axle turnings	15.00 to 15.50
No. 1 cast	18.00 to 18.50
No. 1 busheling	14.00 to 14.25
Drop forge flashings	13.00 to 13.50
Railroad grate bars	12.50 to 13.75
Stove plate	13.50 to 13.75
Pipes and flues	12.00 to 12.25

Machinery Markets and News of the Works

DEMAND INCREASING

Machine Tool Business Shows Slow but Steady Expansion This Month

Chrysler Motor Corporation One of the Largest Purchasers with Order for 20 Turret Lathes

MODERATE increase in the demand for machine tools is reported from some districts. The National Machine Tool Builders' Association in its Sept. 10 report says that "machine tool demand is increasing in line with the increase in demand for machine tool products. Good steady replacement demand is coming from all user industries, with the automobile industry leading for volume of new equipment purchased." The further comment is made that "need for labor saving

is the biggest element in bringing about increased demand for modern equipment."

Barometric figures of the National Machine Tool Builders' Association show that August business was 41.03 per cent of a so-called "normal" as compared with 38.30 per cent in July and 39.65 per cent in June. These figures are based on reports received from about 50 manufacturers of machine tools.

The largest item of business within the week was the purchase of 20 turret lathes by the Chrysler Motor Corporation. Considerable business in the Detroit automobile district is still pending.

Railroad inquiries and purchases are numerous, but usually for single machine. The Delaware, Lackawanna & Western is asking for prices on six tools. A Chicago firm has sent out a small list for a coach shop of the Florida East Coast Railway at St. Augustine, Fla. The Illinois Central has purchased several tools for Sioux City, Iowa, shops.

New York

New York, Sept. 15.

EXCEPT that inquiries continue to reach machine tool sellers in fairly promising numbers, there is no change in the situation this week. Buying has not yet shown the gains that some expected this month might bring. The Delaware, Lackawanna & Western Railroad has issued an inquiry for six tools. The New York Central has bought a 6-ft. radial drill from the Niles-Bement Pond Co.

The plant and equipment of the Downey Shipbuilding Corporation at Arlington, Staten Island, N. Y., has been sold at public auction, subject to court confirmation. The real estate was purchased by Bayard F. Pope, chairman of a bondholders' committee, for \$568,000. The machinery and equipment was bought by Theodore Friedeberg, machinery dealer, 30 Church Street, New York, for \$172,000. Mr. Friedeberg will shortly offer the machinery for sale.

The Standard Soapstone Corporation, 150 Broadway, New York, has completed its organization with \$1,575,000 capital stock, of which \$1,000,000 is paid in, having taken over the assets of the Phoenix Stone Co. W. W. Benjamin and associates will continue operations. More than 1600 acres have been purchased in Nelson County, Va., where a plant will be established at a cost of \$400,000, including equipment. A 1000-hp. condensing steam-turbo electric power house is under construction. A standard-gage railroad, six miles in length, connecting with the main line of the Southern Railway, is being built. Construction is under way for a new town site where homes for employees and a club house will be constructed.

The Board of Transportation, Municipal Building, New York, is completing arrangements for the purchase of 18 blocks of property at 208th to 216 Street, Tenth Avenue and the Harlem River, for a proposed power plant, repair and storage yards, to be used in connection with the new subway line on Eighth, St. Nicholas and Fort Washington Avenues.

F. D. Amory, 10 East Forty-third Street, New York, architect, has plans under way for a two-story machine shop and automobile garage, 65 x 150 ft., on the Albany Post Road, to cost \$50,000 with equipment.

The General Petroleum Corporation, 25 Broadway, New York, operating oil refineries, topping plants, etc., in California and other states, is disposing of a bond issue of \$18,000,000, a portion of the proceeds to be used for extensions and improvements. John Barneson is president.

The Ballinger Co., 100 East Forty-second Street, New York, architect and engineer, is preparing plans for a four-story industrial plant, 100 x 118 ft., on Fifth Avenue, Long

Island City, to cost \$250,000. The name of the occupant is temporarily withheld.

The Concord Coal Corporation, Seventy-sixth Street and East River, New York, has acquired waterfront property on the East River, between 100th and 101st Streets, 365 x 455 ft., for a new coal storage and handling plant. Conveying, loading and other equipment will be installed. The plant will cost about \$250,000.

The Stancourt Laundry Co., 503 East Seventy-second Street, New York, has awarded a general contract to the Commonwealth Engineering Co., 103 Park Avenue, for a mechanical laundry, power house, garage and automobile repair shop, at Garrison Avenue and Worthen Street, to cost \$250,000 with equipment.

Seelig & Finkelstein, 44 Court Street, Brooklyn, architects, have filed plans for a three-story automobile service, repair and garage building, 107 x 109 ft., to cost \$120,000 with equipment.

The Staten Island Edison Corporation, Livingston, S. I., has filed plans for a one-story automatic electric power substation on its right-of-way at Tottenville. The J. G. White Engineering Corporation, 43 Exchange Place, New York, is engineer.

Richardson Radio, Inc., 128 University Place, New York, has leased a portion of the building at Foster Avenue and Hulst Street, Long Island City, for a new plant, and will soon install equipment.

W. P. Katz, 2 Hudson Street, Yonkers, N. Y., architect, has plans for a two-story automobile service, repair and garage building, 36 x 140 ft., to cost \$60,000 with equipment.

F. B. Randall & Son, 829-905 Doll Avenue, North Bergen, N. J., are considering the rebuilding of the portion of their rolling mill destroyed by fire on Sept. 1, with loss including part of the machinery.

The Bayonne Casket Co., Jersey City, N. J., has taken out a permit to erect a new plant at Bennett Street and Virginia Avenue to cost \$40,000. Leroy A. Cowan, 921 Bergen Avenue, is architect.

The Chicago Bridge & Iron Works, Chicago, has plans under way for a new warehouse and distributing plant on a 2-acre tract at Hillside, Newark, N. J., recently acquired, to cost \$50,000 with equipment.

The Reo Motor Car Co., 520 Broad Street, Newark, N. J., has awarded a general contract to Enstice Brothers, 111 Academy Street, for a two-story and basement repair shop and garage, 150 x 157 ft., to cost approximately \$150,000. Fletcher-Thompson, Inc., 542 Fairfield Avenue, Bridgeport, Conn., is architect and engineer.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, is having plans drawn for a four-story factory branch and distributing plant, 95 x 372 ft., at Newark, N.

J., to cost \$500,000 with equipment. Walter S. Timmis, 315 Fifth Avenue, New York, is architect.

The Public Service Electric & Gas Co., Public Service Terminal, Newark, N. J., will begin the construction of a new automatic power substation on Clay Street, to cost \$50,000 with equipment. The company also has plans for a similar power station, 30 x 90 ft., at Passaic and Lockwood Streets, to cost \$60,000. Work is in progress on a third such substation on the Valley Road, Montclair, N. J.

The Truxton Insulator Co., Newark, has leased the upper portion of the building at 50 Spring Street, totaling 3000 sq. ft. of floor space, for the manufacture of radio specialties. A. B. Truxton is president.

William Johnson, 36 Brenner Street, Newark, manufacturer of tools, has awarded contract to the Louis Kilgus Co., 13 Coes Place, for rebuilding the portion of his plant recently destroyed by fire with loss of about \$30,000. Marshall N. Shoemaker, 15 Central Avenue, is architect.

The Associated American Industries, Inc., Newark, recently incorporated, will manufacture several lines, including automobile signals, tail and parking lights, snap gages, etc., and also render a general engineering service in production investigations. J. M. Clark is one of the principals.

The Goodman Electric Machinery Co., 126 Green Street, Newark, is in the market for a used 1½-in. electric drill. It is also looking for second-hand arc welders.

Chicago

CHICAGO, Sept. 14.

MACHINE tool purchases during the week have been about equal to those of the preceding seven days. On the other hand, inquiries are not so numerous, although they are still being received at a better rate than during August. One of the most active industries at this time is that which is supplying machinery to the printing trade. Automobile manufacturers continue to operate at a high rate of production and are entering the market from time to time for miscellaneous tools.

The city of Milwaukee, through its Central Board of Purchases, is inquiring for a 24-in. lathe and a motor-driven grinder. The Pullman Co. has bought a 36-in. open-side planer. Battey & Kipp, Inc., Chicago, has issued a small list for a wood and steel coach shop of the Florida East Coast Railway, St. Augustine, Fla. The Illinois Central purchased for its Sioux City, Iowa, shops a 26-in. sliding-head drill, a tool and cutter grinder; a drill grinder and a sensitive drill.

The Morgan-Gardner Electric Co., 2640 Shields Avenue, Harvey, Ill., has purchased from the Motor Wheel Corporation, Lansing, Mich., a one-story factory containing 46,000 sq. ft. of floor space, together with a 2½-acre tract of adjoining property at Harvey for \$76,500. After remodeling, the building will be occupied by the new owners.

The Moline Pressed Steel Co., East Moline, Ill., contemplates the construction of an addition with 5800 sq. ft. of floor space, to cost \$15,000.

The Central Manufacturing District, Chicago, has awarded the general contract for a power plant, 2005 West Pershing Road, to the E. W. Sproul Co.

The Thayer Action Co., Rockford, Ill., will start construction next week on a new power plant at Eighteenth Avenue and Tenth Street, to cost \$100,000.

The City Council, Springfield, Ill., is arranging for a pumping plant in connection with the construction of a sewage system on the west side, to cost \$800,000. Pease, Greeley & Hanson, 6 North Michigan Avenue, Chicago, are the architects.

The Waterways Paper Products Co., 3201 South Kedzie Avenue, Chicago, has preliminary plans for a new two-story and basement factory at Kedzie Avenue and Thirty-second Street, to cost \$65,000 with equipment. D. H. Burnham & Co., 160 North La Salle Street, are architects. W. A. Strong is president.

James Morrows Sons, 202 North Genesee Street, Waukegan, Ill., have plans for a two-story and basement automobile service, repair and garage building, 76 x 260 ft., to cost \$200,000 with equipment. C. N. Webster, 5 North Genesee Street, is architect.

The Board of Education, Gothenburg, Neb., plans the installation of manual training equipment in its proposed two-story and basement high school, to cost \$150,000, for which bids are being asked on a general contract. A one-

story power house will also be built. Davis & Wilson, 525 South Thirteenth Street, Lincoln, Neb., are architects.

The Seeger Refrigerator Co., Arcade Street and Wells Avenue, St. Paul, Minn., has awarded a general contract to the F. J. Romer Construction Co., 190 Ramsey Street, for a one-story addition, 88 x 200 ft., to cost \$90,000 with machinery.

James Marrin, 416 N. E. Lincoln Street, Minneapolis, Minn., has filed plans for a one-story foundry, 40 x 86 ft.

M. O. Nathan, 123 West Madison Street, Chicago, architect, has plans for a one-story and part basement automobile service, repair and garage, 150 x 275 ft., to cost \$120,000 with equipment.

Ovens, power equipment, conveying and other machinery will be installed in the one and two-story plant to be erected at Fourth Avenue, S. E., and Twenty-sixth Street, by the Crispette Co., First National Soo Line Building, Minneapolis, Minn., to cost \$125,000. Magney & Tusler, Inc., 126 South Ninth Street, are architects.

The Board of Education, Rochester, Minn., has plans for a three-story and basement industrial school, 65 x 245 ft., to cost \$300,000 with equipment. J. H. Crawford, Dental Building, is architect.

New England

Boston, Sept. 14.

THE slight improvement noted earlier in the month in local machine sales did not continue and business the past week fell off. Inquiries, however, are more numerous, but are mostly for single machines. New machines sold since last reports include a cutter and reamer grinder for a Portsmouth, N. H., tool manufacturer, a 32-in. shaper for a New England railroad and an automatic milling machine for an Amesbury, Mass. shop. Transactions in used equipment have been largely from manufacturers' surplus stocks. Local dealers sold a Brown & Sharpe automatic screw machine to a western Massachusetts shop, a 16-in. lathe to a Greater Boston firm, a spindle drill to a local manufacturer and about a half dozen similar tools to other users. The school department, Boston, is in the market for a small amount of sheet metal working equipment for the Parkman school, South Boston.

Grinding machinery makers in Worcester and Providence are reported as fairly busy, and a Vermont manufacturer of lathes has a special order from a valve making company that will keep the plant operating about full for another month. A Springfield grinding machinery maker also is reported as busy. A Hartford small tool producer is very active, but is doing less on large equipment. Another Hartford firm, heretofore doing an encouraging export business, reports a noticeable falling off in both domestic and foreign bookings.

The city of Bridgeport, Conn., will shortly ask bids for a trade school requiring machine tools. Details are lacking.

Plans will be ready shortly for a proposed three-story, 32 x 100 ft. manufacturing plant for the Towle Mfg. Co., 260 Merrimac Street, Newburyport, Mass.

The Simonds Saw & Steel Co., Fitchburg, Mass., has completed plans for a one-story, 130 x 137 ft. plant on North Street, to cost about \$30,000.

The Independent Lock & Key Co., Leominster, Mass., has acquired the plant formerly occupied by the Universal Grinder Co., Winter Street, Fitchburg, Mass. After alterations the Leominster company will move to the new location.

Warner Brothers, Bridgeport, Conn., have leased approximately 1500 sq. ft. manufacturing space in the former plant of the Columbia Phonograph Co. and will install presses for heavy stampings for radio parts and buckles.

The Automatic Electric Clock Co., Inc., 172 Myrtle Avenue, Stamford, Conn., organized to manufacture electric automobile clocks, plans to build a factory later. The company is in the market for small machinery and tools. Mark A. Standow is manager.

The C. J. Root Co., Bristol, Conn., manufacturer of brass hardware, registering machinery, etc., has plans for a four-story addition, 65 x 125 ft. Max J. Unkelbach, New Britain, Conn., is architect.

The Connecticut Co., West Main Street, Waterbury, Conn., has taken bids for a one-story traction car repair, reconditioning and storage works, 205 x 363 ft., to cost \$400,000 with equipment. R. W. Foote, Waterbury, is architect.

The Crane Market

WHILE there is a fair volume of inquiry in both the overhead and locomotive crane fields, purchasing is still light. The American Steel & Wire Co., which recently asked for prices on a total of 107 small capacity cranes with electric hoists has closed on a total of 38 cranes for the New Haven and Worcester plants with a Cleveland builder, the hoists going to unnamed electric hoist makers. The 25-ton gantry for the Pennsylvania Railroad, 30-ton gantry for the Lehigh Valley Railroad are still open and the formal inquiry from the Delaware, Lackawanna & Western Railroad for a small gantry crane has not yet been issued. An outstanding list of locomotive cranes is from the Great Northern Railroad, St. Paul, Minn. Included are: One 35-ton locomotive crane and ditcher; one 35-ton locomotive crane and pile driver; one gasoline driven, crawl-tread shovel with 1½ cu. yd. dipper; one steam driven, crawl-tread shovel with 1½ cu. yd. dipper; one steam driven, crawl-tread shovel with 1½ or 2-cu. yd. dipper; and one all steel, air operated earth spreader with ditching attachment. The Chesapeake & Ohio Railroad, Richmond, Va. is inquiring for a 25-ton locomotive crane. Oliver

Brothers, Inc., 71 Murray Street, New York, are in the market for a used floor operated, elevator hoist, ½ to ¾-ton capacity.

Among recent purchases are:

Delaware, Lackawanna & Western Railroad, a 15-ton, 85-ft. span, 4-motor overhead crane to handle 65-in. magnet, for the Keiser Valley scrap yard, from Manning, Maxwell & Moore, Shaw Electric Crane Co.

Rice & Adams Corporation, Buffalo, a 5-ton and 10-ton electric traveling cranes from the Milwaukee Electric Crane & Mfg. Co.

Victor Mendoza Co., Havana, Cuba, a 20-ton, 31-ft. 8-in. span hand power crane from the Niles-Bement-Pond Co.

National Tube Co., Pittsburgh, one 50-ton, 56-ft. 3-in. span overhead crane for Lorain, Ohio and a 15-ton, 60-ft. span crane for Gary, Ind., from Manning, Maxwell & Moore, Shaw Electric Crane Co.

McClintic-Marshall Co., two 10-ton overhead cranes for Chicago shops from the Harnischfeger Corporation.

Florida East Coast Railway, a 15-ton electric traveling crane from the Niles-Bement-Pond Co.

The Norfolk Woodworking Co., Braintree, Mass., is having plans drawn for a new plant at Atlantic, Mass., to cost \$45,000. L. S. Joslin, 339 Newbury Street, Boston, is architect.

The Rubber Regenerating Co., Naugatuck, Conn., reclaimed rubber specialties, has work under way on a three-story addition to cost \$35,000. The Berlin Construction Co., Berlin, Conn., is contractor.

The American Brass Co., Waterbury, Conn., has awarded a contract to the Immick Co., Meriden, Conn., for a one-story addition to cost \$17,000. It will be used largely as a casting shop.

The S. M. Howes Co., 509 Medford Street, Boston, manufacturer of stoves, ranges, etc., has filed plans for a one-story addition to replace a portion of its plant recently destroyed by fire.

The Torrington Specialty Co., Winsted Road, Torrington, Conn., has awarded a contract to the Torrington Building Co., for a one-story addition, 40 x 60 ft., for the manufacture of automobile accessories and radio equipment. E. W. Morgan is president.

Work will begin on a two-story automobile service, repair and garage building at Worcester, Mass., for the Y. D. Service Garage, Inc., to cost \$150,000 with equipment. General contract has been let to Fred T. Ley & Co., Springfield, Mass.

Fire, Sept. 9, destroyed a portion of the wood box manufacturing plant of the L. C. Andrews Co., South Windham, Me., with loss estimated at \$275,000 including equipment. Plans for rebuilding are under consideration.

Fire, Sept. 3, destroyed a portion of the plant of Greene Brothers & Co., Charlestown, Mass., manufacturers of wagon bodies, damaging six buildings in all. Plans for rebuilding are said to be under advisement.

A. H. Wells & Co., Waterbury, Conn., manufacturers of metal tubing, etc., have awarded contract to the Clark Construction Co., 168 Grand Street, for a one-story addition on Mills Street, 100 x 145 ft.

Philadelphia

PHILADELPHIA, Sept. 14.

PLANS have been completed by the Philadelphia & Reading Railway, Reading Terminal, Philadelphia, for a new power house at Birdsboro, Pa. Samuel T. Wagner is company architect.

The Hall Planetary Machine Co., Fox Street and Abbottsford Road, Philadelphia, has awarded contract to Henry P. Schneider, 3713 Old York Road, for a one-story shop addition.

The Philadelphia Rubber Works Co., Land Title Building, Philadelphia, manufacturer of mechanical and other rubber goods, is said to have closed for the purchase of about 20 acres at Oaks, near Norristown, Pa., as a site for a new plant. It will include a power house and machine shop and cost \$600,000 with equipment.

The Viscose Co., Marcus Hook, Pa., has plans for an addition to the power house at its local artificial silk mills, to cost \$50,000 with equipment. The Ballinger Co., Twelfth and Chestnut Streets, Philadelphia, is architect.

The American Optical Co., Southbridge, Mass., has acquired the plant and business of the DeZeng Standard

Co., Camden, N. J., manufacturer of optical and surgical equipment, and will consolidate with its organization. It is purposed to discontinue the plant at East State and Twentieth Streets and remove the machinery to the Southbridge works which will be extended to accommodate the increase.

The Fisher Body Corporation, General Motors Building, Detroit, is said to be considering an addition to the former plant of Fleetwood Body Corporation, Fleetwood, Pa., recently acquired.

The Pennsylvania Gas & Electric Co., York, Pa., is disposing of a block of preferred stock, the proceeds to be used in part for extensions and improvements in plant and system.

Fire, Sept. 2, destroyed the plant of the Mountain Springs Ice Co., Reeders, Pa., with loss estimated at \$150,000. Plans for rebuilding are under advisement.

The Masonic Home Commission, Grand Lodge, F. and A. M., Broad and Filbert Streets, Philadelphia, has awarded a contract to the Curtis-Grindrod Co., 10 South Eighteenth Street, for two mechanical shop buildings at the home at Elizabethtown, Pa., each one story, about 40 x 210 ft. Edgar A. Wightman, Bankers' Trust Building, Philadelphia, is architect.

The Lehigh Portland Cement Co., Allentown, Pa., will erect a group of 23 buildings for its new mill at Sands Eddy, near Easton, Pa., now in course of construction. It is purposed to have several of the structures ready for machinery installation in the near future. The entire plant will cost about \$1,500,000. The Public Service Production Co., Newark, N. J., is engineer.

The Board of Education, Allentown, Pa., has asked bids on a general contract for a new central junior high school, to include a manual training department, to cost \$400,000.

The J. G. Spedel Foundry Co., Hamburg, Pa., has broken ground for a one-story foundry, 80x90 ft. A new core oven, 20x30 ft., will also be erected, as well as other buildings, including a sand house.

The C. A. Reed Co., Williamsport, Pa., has been chartered under Delaware laws to take over and consolidate the local company of the same name, manufacturer of paper specialties, and the Jopson Mfg. Co., Boston, manufacturer of automatic tag-manufacturing and stringing machines and parts. A stock issue to total \$800,000, is being sold, a portion of the fund to be used for expansion. C. A. Reed is president.

The Lehigh Coal & Navigation Co., Lansford, Pa., has construction in progress on a new steel coal breaker, and will install equipment for handling the output of three collieries. The plant will cost close to \$1,750,000 with machinery.

The Keubler Foundries, Inc., Easton, Pa., is making improvements in its plant, including the installation of a new unit pulverizing system for smoke elimination.

Buffalo

BUFFALO, Sept. 14.

THE Rochester Gas & Electric Co., Rochester, N. Y., has plans for a five-story and basement power station and switch house, 37x105 ft., to cost \$200,000, with equipment.

The Board of Education, Telephone Building, Buffalo, plans the installation of manual training equipment in its

proposed three-story and basement high school at Northampton and Fougerson Streets and East Parade Avenue, to cost approximately \$1,500,000. F. J. and W. A. Kidd, 524 Franklin Street, are architects.

The Tucker Rubber Corporation, 32 Spencer Street, Buffalo, manufacturer of mechanical rubber goods, has acquired the plant and machinery of the New York Rubber Co., bankrupt, at Beacon, N. Y., for \$94,965. The new owner will improve the works for a branch plant.

Ovens, power equipment, conveying and other machinery will be installed in the two-story and basement plant, 120x130 ft., to be erected at Elmira, N. Y., by the Spaulding Bakery Co., Binghamton, N. Y., to cost \$110,000. The McCormick Co., Inc., 121 South Negley Street, Pittsburgh, is architect and engineer. R. Z. Spaulding is head.

Fire, Sept. 1, destroyed the lumber plant and planing mill of the Duncan Lumber Co., Lockesburg, N. Y., with loss of \$220,000 including equipment. Plans for rebuilding are under consideration.

A power house and machine shop are planned by the Hydrox Chemical Co., 220 West Huron Street, Chicago, at its proposed plant on the River Road, Buffalo, site lately acquired, to be one and two stories, estimated to cost \$250,000 with equipment. General contract has been let without competition to the L. A. Harding Construction Corporation, 1355 Main Street, Buffalo.

The Northeast Electric Co., Rochester, N. Y., is in the market for a used No. 1 Townsend riveting machine. A. M. Anderson is purchasing agent.

A general contract has been awarded by the Eastman Kodak Co., Rochester, N. Y., to the Ridge Construction Co., local, for two additions, to cost \$108,000 and \$14,000, respectively. Some equipment will be required.

Cincinnati

CINCINNATI, Sept. 14.

MACHINE tool sales attained small proportions the first half of September. Although builders have many quotations out, they have closed but few orders. Production has slackened somewhat, but several important plants continue to operate on a heavy schedule. A leading automobile manufacturer placed an order with a local builder for nine large lathes, while the Illinois Central purchased four machines. The Dayton Engineering Laboratories Co., Dayton, Ohio, closed for two automatic lathes. It is expected that the Louisville & Nashville will buy four or five lathes shortly. The Big Four inquiry for a 36-in. lathe and a boring mill is still pending. Purchases by automobile makers constitute a good portion of the business received by automatic lathe and milling machine manufacturers. A local turret lathe builder booked five orders for single machines the past week.

While business in planers is dull, inquiries indicate that an improvement is near at hand. Demand for radial and upright drills is fairly active. The John Steptoe Co. received an order for a 16-in. lathe from the Board of Education, Mesa, Ariz. The Illinois Central is the buyer of a 10-ft. flanging clamp from the Niles-Bement-Pond Co. Sales of small tools have held up well this month.

Fire, Sept. 10, caused a loss of \$15,000 in the heat treating department of the Delco Light Co., Dayton, Ohio.

The P. B. Warner Equipment Co., Liston Avenue and Barkley Street, Cincinnati, suffered a loss by fire Sept. 9 of two buildings valued at \$17,000, and equipment at \$50,000.

The Buckeye Porcelain Enameling Co., Cincinnati, has acquired the plant and equipment of the Cincinnati Enameling Co., Elmore and Townsend Streets. Production will start at once.

Electrical pumping and other equipment will be required in connection with a new filtration plant for the city of Batavia, Ohio, for which a general construction contract has been awarded to the Burnip Construction Co.

The General Power & Light Co., operating properties at Corydon, Seebree and Calhoun, Ky., and at western points, is disposing of a note issue of \$900,000, a portion of the fund to be used for extensions and improvements in power plants and system. E. J. Condon is president.

The Tennessee Electric Power Co., Chattanooga, Tenn., is said to have plans under way for extensions in its steam-operated electric power plant at Hales Bar, to include the installation of a new generating unit and accessory equipment.

The Goodyear Tire & Rubber Co., Akron, Ohio, has leased a building to be erected at Memphis, Tenn., two stories, 100 x 170 ft., for a factory branch and distributing plant.

The Roy C. Whayne Supply Co., 608 West Jefferson Street, Louisville, is in the market for 30-in. gage, portable 16-lb. rails.

The Common Council, Watertown, Tenn., plans the installation of pumping equipment in connection with a proposed municipal waterworks for which bonds for \$55,000, have been approved. The Ambler Engineering Co., Travelers' Building, Richmond, Va., is engineer.

The Crane Enamelware Co., Chattanooga, Tenn., has awarded a general contract to Moudy & Co., James Building, for four additions to its plant to cost \$650,000 with equipment. The project includes a one-story foundry, 100 x 330 ft.; grinding works, 60 x 330 ft.; addition to small ware foundry and installation of equipment to double the present output, and one-story enameling works, 180 x 225 ft.

At a reorganization meeting of the board of directors of the Cincinnati Electrical Tool Co., Cincinnati, the following officers were elected: Joseph Wolf, president and treasurer; R. K. LeBlond, vice-president; Edward G. Schultz, secretary. The company manufactures a full line of portable electric drills, grinders and buffers and has branch offices in all the large cities. It will shortly move into larger quarters and expand its business.

Cleveland

CLEVELAND, Sept. 14.

SOME additional machine tool business was placed by Detroit automobile manufacturers during the week, including 20 turret lathes purchased by the Chrysler Motor Corporation from a Cleveland manufacturer. Some business is still pending in Detroit but it is believed that the heavy buying by automobile builders is about over for the present. The market continues fairly active in small lots of single machines from widely scattered sources. The Universal Drive Shaft Co., Cleveland, which is equipping a new plant, purchased four or five production machines. The Nickel Plate Railroad has purchased a 5-ft. radial drill against its recent list and the New York Central lines are inquiring for a 24-in. heavy duty drilling machine.

The National Tube Co. has purchased three blast furnace turbo blowers of 80,000 cu. ft. capacity all for its Lorain, Ohio, plant to replace gas engine reciprocating equipment, two going to the Ingersoll-Rand Co. and one to the General Electric Co. The Otis Steel Co. placed a 2000-hp. motor for a jobbing mill drive with the General Electric Co. The demand for small motors continues active, but there is little inquiry for electrical equipment in large units.

The Holmes Bronze Foundry Co., Bedford, Ohio, has placed the general contract for foundry with the H. K. Ferguson Co., Cleveland. C. L. McMasters is general manager.

The Mansfield Vitreous Enameling Co., Mansfield, Ohio, has awarded the general contract to the Jacob Wolfe Construction Co. for an addition. L. A. Adams is manager.

The Brookside Brass Foundry & Mfg. Co., 2315 Seltzer Avenue, Cleveland, has awarded contract to J. C. Weekley, 5109 Broadview Road, for a foundry, 60 x 60 ft.

The New York Central Railroad will build a machine shop, 60 x 80 ft. at Airline Junction, near Toledo, Ohio. The general contract has been placed with the H. K. Ferguson Co. Several jib cranes will be required.

The Boehm Pressed Steel Co., 2219 West Sixty-third Street, Cleveland, has under construction an addition to be used for a tool room.

The Fremont Metal Body Co., Fremont, Ohio, manufacturer of automobile bodies, will build a one-story addition, 60 x 200 ft.

St. Louis

ST. LOUIS, Sept. 14.

THE Chicago, Burlington & Quincy Railroad Co., 547 West Jackson Boulevard, Chicago, has awarded a general contract to G. A. Johnson & Son, 1225 North Clark Street, for a one-story engine house, with shop and repair facilities, to cost \$30,000, at Hannibal, Mo. W. T. Krausch, 547 West Jackson Boulevard, Chicago, is company engineer of buildings.

The Independent Ice & Cold Storage Co., Wichita, Kan., is considering the erection of a five-story and basement ice

and cold storage plant, 100 x 100 ft., to cost \$80,000 with equipment.

Fire, Sept. 6, destroyed a portion of the veneer mill, saw mill and power house of the Chicago Mill & Lumber Co., Blytheville, Ark., with loss of \$400,000. Headquarters are at 111 West Washington Street, Chicago. It is planned to rebuild.

The Marland Oil Co., Tulsa, Okla., is said to have plans for extensions and betterments in its works at Ponca City, Okla., to include the installation of four water-tube boilers, each 550 hp. rating; automatic feed water regulators, additional filters, tanks, etc., designed to double the present plant output. W. Marland is president.

The Stamps Ice & Coal Co., Stamps, Ark., is considering rebuilding a portion of its ice-manufacturing plant recently destroyed by fire, with loss of \$42,000 including equipment.

The City Council, Enid, Okla., plans the installation of pumping machinery in connection with extensions and improvements in the municipal waterworks, estimated to cost \$225,000. A bond issue is being arranged.

The Climax Specialty Co., 1515 Pine Street, St. Louis, manufacturer of rubber products, has awarded a general contract to Trowbridge & Causins, Hannibal, Mo., for a new one-story plant at Troy, Mo., 80 x 100 ft., to cost \$25,000 with equipment. Edward F. George is head.

The Common Council, Willow Springs, Mo., will install deep well pumping machinery in connection with proposed extensions and betterments in the municipal waterworks. Bonds have been voted.

The United Power & Light Co., Kinsley, Kan., is planning for extensions and improvements in its local steam-operated electric power plant, to cost \$50,000 including equipment.

Fire, Sept. 8, destroyed a portion of the plant of the Killark Electric Mfg. Co., 3940-46 Easton Avenue, St. Louis, manufacturer of electric fuses, transformer apparatus, etc., with loss of \$30,000 including equipment. Plans are under consideration for rebuilding.

The St. Louis Label Works, Inc., 925 North Eleventh Street, St. Louis, manufacturer of paper specialties, has awarded a general contract to the Fruin-Colnon Construction Co., East St. Louis, Ill., for a new three-story and basement plant, 80 x 180 ft., to cost \$100,000 with equipment. Leonard Haeger, 3844-A Utah Street, is architect.

The Roseland Farm & Mfg. Co., Warrensburg, Mo., will begin the construction of a new cold storage and refrigerating plant, to cost \$40,000 including machinery. Charles A. Smith, Finance Building, Kansas City, Mo., is architect.

The Miller Boiler & Tank Co., Enid, Okla., has been incorporated with \$250,000 capital stock to manufacture, repair and erect tanks, structural and boiler work, refinery and oil field equipment, steel derricks, etc. It will shortly be in the market for about 500 tons of steel, including blue annealed sheets, tank steel, fire box and flange steel, universal plates, channels, I-beams and angles, mild steel bars in flats and rounds. A building has been purchased, 75 x 160 ft., and part of the machinery bought. T. L. Miller is president and general manager.

The W. F. Norman Sheet Metal Mfg. Co., Nevada, Mo., is in the market for a motor-driven planer and other equipment.

Pittsburgh

PITTSBURGH, Sept. 14.

A FAIRLY steady demand for single tools still is reported, but the market lacks activity. Orders are largely for replacement and include few for new shops. The McClintic-Marshall Co. was a recent buyer of three punches for one of its Chicago plants.

Contract has been let by the Kier Fire Brick Co., Oliver Building, Pittsburgh, to the H. K. Ferguson Co., for a new plant at Salina, Pa., to cost \$100,000 with equipment.

The Duquesne Slag Products Co., Diamond Building, Pittsburgh, has acquired additional property in the Nine Mile Run section, vicinity of Glenwood, for \$248,691, and will use it for expansion.

The Pittsburgh Parking Garage Co., Inc., Pittsburgh, has awarded a general contract to the Mellon-Stuart Co., Oliver Building, for a nine-story service, repair and garage building, to cost approximately \$350,000 with equipment.

The Logan Machine & Electric Co., Monitor Junction, near Charleston, W. Va., has tentative plans for rebuilding the portion of its plant recently destroyed by fire, with loss estimated at \$50,000 including equipment.

The Board of Education, Brownsville, Pa., plans the installation of manual training equipment in its proposed two-story and basement high school, to cost \$100,000. Bids

recently received on a general contract have been rejected and new bids will be asked. J. H. Harmon, Fayette Title Trust Building, Uniontown, Pa., is architect.

The Aluminum Co. of America, Inc., Oliver Building, Pittsburgh, is arranging for extensive manufacture of metal furniture and will develop plant facilities in this line. Initial production has been started at the Buffalo works for office furniture of aluminum construction.

The F. J. Lewis Mfg. Co., 2513 South Robey Street, Chicago, manufacturer of roofing products, has acquired 8 acres at Fairmont, W. Va., and will begin the erection of a new branch plant, to cost \$150,000 with equipment. H. J. Schulte will be local manager. William H. Lewis is president.

The Board of Education, McKees Rocks, Pa., is considering the installation of manual training equipment in a three-story and basement high school addition to cost \$150,000. John O. Phillips, Pittsburgh, is architect.

The Star Foundry & Machine Co., North Water Avenue, Sharon, Pa., has been acquired by Robert Dempsey, Grove City, Pa., who will continue the operation of the plant.

Detroit

DETROIT, Sept. 14.

THE West Michigan Steel Foundry Co., Muskegon, Mich., is planning to purchase a disk grinder, with blower, two-stage air compressor and other equipment.

The Wayne County Board of Road Commissioners, Real Estate Exchange Building, Detroit, has awarded a general contract to C. L. Carter, 40 West Milwaukee Avenue, for a one-story automobile machine and repair shop, with garage, 66 x 150 ft., for County trucks and cars, to cost \$50,000 with equipment.

The Detroit Edison Co., Detroit, is arranging for a new stock issue to total from \$7,000,000 to \$8,000,000, the majority of the proceeds to be used for extensions and improvements in plants and system. The company will spend about \$16,000,000 the present year for expansion.

The Brighton Mfg. Co., Brighton, Mich., recently organized to manufacture pumping machinery, filter equipment, etc., has acquired local property for the initial unit of a new plant, to cost about \$50,000 with machinery. W. J. Kilpatrick is president and general manager and Charles E. Howland, secretary and treasurer.

The Contractors Equipment Co., 5169 Martin Avenue, Detroit, has awarded a general contract to Gallagher & Fleming, 6500 Epworth Boulevard, for a one-story machine shop and garage, 40 x 85 ft., to cost \$35,000. Janke, Venman & Krecke, 1504 Broadway, are architects.

The General Necessities Corporation, 2457 Grand River Boulevard, Detroit, has acquired the plant and business of the Iceless Refrigerating Machine Co., manufacturer of household refrigerators. The new owner contemplates expansion in this line and will also develop production of iceless ice cream cabinets and small ice-making machines.

The Corduroy Cord Tire Co., Grand Rapids Mich., has work in progress on a two-story addition, 100 x 132 ft., and plans the installation of machinery to increase the present output about one-third. It will cost close to \$200,000.

The Board of Education, Newberry, Mich., will install manual training equipment in its proposed two-story and basement senior and junior high school, estimated to cost \$300,000, for which it is expected to ask bids on a general contract this month. G. Arntzen, 716 Ludington Street, Escanaba, Mich., is architect.

The Muskegon Aluminum Foundry Co., Muskegon, Mich., has work under way on a new one-story foundry and will install machinery at an early date.

The McCarthy Aeronautical Engineering Co., Grand Rapids, Mich., will manufacture airplanes in a factory leased at Lowell, Mich.

South Atlantic States

BALTIMORE, Sept. 14.

BIDS will be asked at once by the Ward Baking Co., Southern Boulevard and East 143rd Street, New York, for its proposed four-story plant, 150 x 390 ft., at Edmondson Avenue and Bentalou Street, Baltimore, to cost \$500,000 with equipment. C. B. Comstock, 110 West Fortieth Street, New York, is architect.

The Columbia Clay Co., Urlichville, Ohio, manufacturer of sewer pipe, etc., has tentative plans for extensions in its works at Columbia, S. C., including buildings and additional machinery to cost \$300,000. Eugene Evans is president.

The Common Council, Winchester, Va., plans the installation of pumping equipment and water-softening apparatus

in connection with proposed extensions and improvements in the municipal waterworks. Whitman, Requart & Smith, Baltimore, are engineers.

The Taylor-Parker Co., Water Street and Commercial Place, Norfolk, Va., has inquiries out for a motor-driven circular saw, suitable for cutting rails, also a hydraulic spring stripping machine, about 100 tons capacity.

The Cuthbert Crute & Refrigerating Co., Cuthbert, Ga., recently acquired by new interests headed by John D. Gunn, Jacksonville, Fla., has plans for extensions and the installation of additional machinery.

The Georgia-Alabama Power Co., Albany, Ga., has plans for the complete electrification of the pumping plant at Meigs, Ga., used for city service. It recently acquired the plant and property of the Meigs Light & Power Co., and plans extensions and improvements.

The North State Feldspar Corporation, Micaville, N. C., has an expansion program under way at its properties, including the installation of a new grinding unit and auxiliary equipment. Work has begun on a new steam-operated electric power plant. S. J. Hamilton is president and Rudolph Glatly, manager.

C. H. Potter, Tuxedo, N. C., has inquiries out for wood-turning and polishing machinery for installation in a local building.

The general purchasing officer, Panama Canal, Washington, is taking bids until Sept. 30 for steel rope, steel billets, staybolt iron, bolts, nuts, rivets, washers, wire, cable, etc., Panama circular 1695 until Sept. 23 for magnet wire, brass bolts, stud bolts, brass nuts, annealed copper wire, galvanized guy wire, etc., Panama circular 2393.

The Mexican Petroleum Corporation, Baltimore, has work in progress on a new asphalt refining plant in the vicinity of its works at Curtis Bay, estimated to cost \$1,000,000, with machinery. It is expected to have the first unit ready for service by the close of the year.

The Board of Public Service, Charleston, S. C., will receive bids until Sept. 22 for four electric-operated centrifugal pumps, two with capacity of 1800 gal. per min., and two, 1000 gal. per min., with motors, automatic starting apparatus, etc. J. H. Dingle is city engineer.

The Sinclair Oil Refining Co., 45 Nassau Street, New York, is reported to be planning for a new oil storage and distributing plant at Macon, Ga., to cost \$75,000 with equipment.

The State Board of Education, Raleigh, N. C., is considering the installation of manual training equipment in its proposed high school at King, N. C., to cost \$150,000.

The Maxton Oil & Fertilizer Co., Maxton, N. C., recently formed to take over and operate the former plant of the Elba Mfg. Co., contemplates extensions and the installation of additional machinery. The new company has increased its capital to \$200,000. E. H. Evans, Laurinburg, N. C., is president.

The Cumberland Contracting Co., Cumberland, Md., has acquired property on Wills Creek, previously held by the Cumberland Hydraulic Contracting Co., and plans the erection of new repair shops, storage and distributing facilities.

R. E. Steele, 330 Asheboro Street, Greenville, S. C., and associates, are arranging for a new ice and cold storage plant, 55 x 118 ft., to cost \$100,000 with equipment.

The Common Council, Jonesville, S. C., plans the installation of pumping machinery in connection with a proposed municipal waterworks and sewage plant, to cost \$77,000, in which amount bonds have been approved. Warren H. Booker, Charlotte, N. C., is consulting engineer.

The Black & Decker Mfg. Co., Towson, Md., has announced a substantial price reduction on the Black & Decker Nos. 8 and 81 portable electric drills. Prices on all other Black & Decker tools remain unchanged.

Indiana

INDIANAPOLIS, Sept. 14.

THE Indiana Lock Joint Pipe Co., Lafayette, Ind., manufacturer of cement pipe, has tentative plans for rebuilding the portion of its plant destroyed by fire Sept. 2, with loss estimated at \$40,000 including equipment.

The Lyons Clay Products Co., Center Point, Ind., recently organized with a capital of \$150,000 to manufacture tile and other fireproofing products, has plans under way for new works, to cost \$75,000 with machinery. Lawrence Lyons and John B. Lyons, Jr., both of Brook, Ind., head the company.

The Bendix Brake Co., 401 North Anthony Street, South Bend, Ind., manufacturer of automobile equipment, has awarded a general contract to the H. G. Christman Co., 306 South Notre Dame Avenue, for a new one-story plant, 100 x 550 ft., to cost \$80,000 with equipment.

The Board of Education, 150 North Meridian Street, Indianapolis, plans the installation of manual training equipment in a proposed two-story and basement high school for colored students at West and Eleventh Streets, to cost \$500,000. Bids have been asked on a general contract. Harrison & Turnock, Board of Trade Building, are architects.

The Peerless Foundry Co., Ludlow and Valley Avenues, Indianapolis, manufacturer of gray iron castings, etc., is arranging to immediately rebuild the portion of its plant destroyed by fire Sept. 3, with loss estimated at \$50,000 including equipment. C. W. Sparks is secretary.

The Inland Box Corporation, Anderson, Ind., will establish a new plant for the manufacture of paper boxes and containers in the building at West Morris Street and the Belt Railroad, Indianapolis, 100 x 800 ft. H. C. Kranert, formerly manager of the Sefton Co., Anderson, is president. George E. Bomberger is vice-president.

The Kokomo Brass Co., Kokomo, Ind., has awarded a general contract to E. L. Danner, Kokomo, for a one-story addition, 50 x 132 ft., to cost \$37,000. Oscar Cook, Citizens' Bank Building, is architect.

The Lee Trailer & Body Co., Plymouth, Ind., manufacturer of automobile bodies, etc., has awarded a general contract to the O'Keefe & Thompson Co., for a new one-story plant to cost approximately \$25,000.

The Detroit Stoker Co., Detroit, Mich., has placed contract with the H. K. Ferguson Co., Cleveland, for a new plant at Monroe, Mich., to include a foundry, 150 x 160 ft. and a pattern storage building 60 x 80 ft.

The Warner Machine Co., Muncie, Ind., is building a shop in which it plans to do special machine work on automobile equipment.

The Advance-Rumely Co., LaPorte, Ind., will erect a one-story addition to its plant.

The Ames Shovel & Tool Works, Inc., Anderson, Ind., is asking bids on a one-story addition to its plant.

Gulf States

BIRMINGHAM, Sept. 14.

BIDS are being asked by the United States Engineer, Florence, Ala., until Sept. 23, for one movable head gate hoist for the power house at the Wilson Dam, Tennessee River.

The City Council, Montgomery, Ala., is asking bids until Oct. 20 for one electric-operated centrifugal pumping unit, capacity of 6,000,000 gal. per day, pump to operate under 110 lb. maximum pressure, motor to operate at 2200 volts a.c. J. M. Garrett is city engineer.

The Crane Co., 836 South Michigan Avenue, Chicago, is having plans completed for a four-story factory branch and distributing works at McKinney Avenue and Hutchins Street, Houston, Tex., to cost \$90,000 with equipment. Alfred C. Flinn, Bankers' Mortgage Building, Houston, is architect.

Kent & Middleton, Corsicana, Tex., have acquired the oil refinery of the Owens Refining Co., Ardmore, Okla., at Rockdale, Tex., for \$100,000. Plans are under way for the installation of a new refining unit and improvements in the present plant to cost \$40,000.

Fire, Sept. 2, destroyed a portion of the veneer mill of the H. L. White Lumber Co., Columbia, Miss., and box-manufacturing plant of the White Box Co., on adjoining site, with loss estimated at \$125,000 including equipment. It is planned to rebuild.

The Texas & Pacific Railway Co., Dallas, Tex., has awarded a general contract to V. E. Ware, 1614 East Missouri Street, El Paso, Tex., for new shops at Shreveport, La., including power house, to cost \$100,000 with equipment. E. F. Mitchell is chief engineer.

The Landa Rock Products Co. New Braunfels, Tex., is in the market for hose-clamping tools and is desirous of getting in touch with manufacturers.

The Swiftsure Petroleum Co., Houston, Tex., is disposing of a bond issue of \$400,000, a portion of the proceeds to be used for extensions and improvements in refining and distributing plants. Mills Bennett is president.

The General Foundry Co., Anniston, Ala., recently organized, is planning for the operation of local works for the production of grey iron castings. J. C. Broadnax is president.

The Brownsville Ice & Cold Storage Co., Brownsville, Tex., is arranging for a new ice-manufacturing plant with initial capacity of about 45 tons per day. A cold storage and refrigerating plant will also be built with capacity of 800 tons. H. S. Shaner is engineer.

The Birmingham Casket Co., 2701 North Twenty-seventh Street, Birmingham, has plans for a two-story addition, 50

x 175 ft., to increase the capacity about one-third. It will cost approximately \$50,000 with equipment. John W. Cannon is head.

The Town Council, Sebring, Fla., is asking bids until Sept. 28 for one oil engine, 1000 to 1500-hp. capacity, direct-connected to an a. c. generator, operating at 2300 volts, three phase, 60 cycles, without exciter, but with generator panel and accessory apparatus complete; also for one 50-kw. direct-connected exciter set, 125 volts, d.c., with motor and exciter panel, switches, instruments, etc.

The Common Council, Hubbard, Tex., is considering the installation of pumping machinery in connection with proposed extensions and improvements in the municipal water-works to cost \$75,000. The Elrod Engineering Co., 3124 Main Street, Dallas, Tex., is engineer.

H. L. Sullivan, 915 Whitney Central Building, New Orleans, is in the market for clay-mining machinery and desires information regarding methods and equipment for mining kaolin.

The King Lumber Co., Nocatee, Fla., has tentative plans for rebuilding its crate and box manufacturing factory, recently partially destroyed by fire. The work is estimated to cost \$100,000 with machinery.

The Middle West Utilities Co., Frost Building, San Antonio, Tex., is considering the construction of a new hydro-electric power plant in the vicinity of Cuero, Tex., to cost \$150,000. Work is under way on extensions and improvements in the power plant and system at Gonzales, Tex., to cost approximately \$125,000.

The Atchison, Topeka & Santa Fe Railway Co., Topeka, Kan., is said to be planning the installation of a water-treating plant at Slaton, Tex., to cost \$40,000. H. W. Wagner is chief engineer.

The Texas Public Utilities Co., Bastrop, Tex., has plans for a new steam-operated electric generating station to cost \$250,000 with machinery.

The Mexico Hardware Co., El Paso, Tex., is in the market for wire nail machines.

Milwaukee

MILWAUKEE, Sept. 14.

WITH local foundries and machine shops entering the fall season better fortified with orders than a year ago, and a number of them finding it necessary to make enlargements, the outlook for machine-tool business is considered promising. In automotive lines the demand so far this month has been exceptionally good and car builders as well as units and parts makers are buying a considerable aggregate, although orders are individually small and scattering. The city of Milwaukee opened bids Sept. 10 on a large lathe, milling machine and shaper. There are 12 bidders and prices named cover a wide range. An award will be made late this week. Milwaukee industries added 400 new men in August, bringing the total on Sept. 1 to 33,243, the highest since March, 1924.

The Jenkins Machine Co., Sheboygan, Wis., manufacturer of specialized machinery for automobile body, piano, radio, dowel door, casket and furniture factories, and controlling also a division manufacturing automobile bumpers and stampings, has purchased the entire plant of the defunct Falls Machine Co., at Sheboygan Falls, and will transfer its operation gradually, so that full operation will be possible by Feb. 1. The present plant on North Eighth Street, with 52,000 sq. ft., will be disposed of at that time. The Falls plant, with 122,000 sq. ft., and 13½ acres of land, is equipped for the production of multiple-cylinder high speed engines and important changes and additions to equipment will be necessary. A. G. Stuedeman, principal owner of the Jenkins company, is president and general manager.

The Ajax Sheet Metal & Iron Works, Inc., Milwaukee, has been incorporated with a capital stock of \$10,000 to succeed to the partnership business of similar name at 338 Davidson Street by A. H. Willson and W. C. Duwe. Plans are being made for enlarging the factory and installing additional equipment to increase the capacity on present lines and provide for additional lines. The ownership and management remain unchanged.

The Prescott Co., Menominee, Mich., has received the general contract from the Commissioner of Indian Affairs, Department of the Interior, Washington, for the construction as well as the equipment of a \$300,000 sawmill at Neopit, Wis., in the Menominee Indian Reservation, re-

placing a mill totally destroyed by fire two years ago. The Prescott Co. designed the new plant. It has sub-let the work of constructing a reinforced concrete mill and auxiliary mill to the Wisconsin Engineering & Construction Co., Green Bay, Wis. It will contain two 8-inch band mills and one 7-ft. horizontal resaw. All units will be driven electrically, the requirement being 45 motors ranging from 5 to 150 hp.

The Drew Barn Equipment Co., Watertown, Wis., has been organized by H. H. Drew, H. N. Smith and H. D. Gaebler with \$25,000 capital to establish a new factory to manufacture a general line of dairy barn fixtures and equipment.

The Vincent-McCall Spring Co., Kenosha, Wis., manufacturer of bed and automobile springs, will build a one-story addition, 42 x 50 ft., for office purposes and use the present administration space for manufacturing. The work is in charge of Armstrong & White, architects, Kenosha, and 200 East Erie Street, Chicago.

The Sengbusch Self-Closing Inkstand Co., 165 Michigan Street, Milwaukee, has purchased for \$75,000 the plant of the Maas Carbonator Co., 2218-2223 Clybourn Street, local, and will take possession May 1. Meanwhile the Maas company intends to erect a new machine shop on another site. The Sengbusch company will add two stories to the present two-story Maas plant, providing a floor space of about 40,000 sq. ft. G. J. Sengbusch is president and general manager.

The Waupun, Wis., Water and Light Commission will close bids Sept. 22 for furnishing one single-stage 750-gal. centrifugal pump with a 2300-volt General Electric motor and starter, with alternate bids on the same equipment but with a gasoline engine and motor drive. Richard Zimmerman is city clerk.

The Oshkosh, Wis., Board of Industrial Education accepted the low bid of \$167,000 entered by the C. R. Meyer & Sons Co., 50 State Street, local, for the general construction of a new vocational training school to cost about \$275,000 complete. The architects are Auler & Jensen, Oshkosh. R. K. Schriber, 409 Washington Street, is president of the board.

The Racine, Wis., Iron & Wire Works is making some purchases of new equipment, principally to increase its production of wire shelving for refrigerators and gymnasium baskets, two lines developed within recent months.

The Harvey Spring & Forging Co., Racine, Wis., is completing the construction of a new heat treating shop, 100 x 150 ft., and while part of the equipment has been purchased, the principal items remain to be placed between now and Dec. 1. E. J. Harvey is president and general manager.

Pacific Coast

SAN FRANCISCO, Sept. 9.

PLANS are being completed for a one and two-story factory on West Third Street, San Francisco, for the Electric Storage Battery Co., 1536 Bush Street, to cost \$125,000 with equipment. Harry H. Meyers, Kohl Building, is architect. Headquarters of the company are at Nineteenth Street and Allegheny Avenue, Philadelphia.

The Board of County Supervisors, Court House, Los Angeles, is asking bids until Sept. 28 for electric generating and auxiliary equipment for the new power plant at the County farm, near Downey, Cal.

The Schreck Ice & Cold Storage Co., Baker, Ore., is arranging for a new ice-manufacturing plant adjoining its present cold storage building.

E. H. Denke, 1317 Hyde Street, San Francisco, architect, has plans for a five-story automobile service, repair and garage building to cost \$125,000 with equipment.

The Miller Auto Bed Co., 1112 East Twelfth Street, Oakland, Cal., manufacturer of disappearing beds for apartments, is having plans completed for a new one-story factory to cost \$23,000 with equipment. L. F. Hyde, 372 Hanover Avenue, is architect.

The Board of Education, San Bernardino, Cal., will soon begin work on a one-story manual training building at the Sturges junior high school, Curtis Avenue, to cost close to \$50,000 with equipment. Dewitt Mitcham, Platt Building, is architect.

Fire, Sept. 5, destroyed the plant of the Utah Oil Refining Co., Salt Lake City, Utah, with loss of \$600,000 including machinery. Plans for rebuilding are under consideration.

The Washington Water Power Co., Spokane, Wash., is completing plans for the construction of a hydroelectric power house at Lake Chelan, near Wenatchee, Wash., to cost \$750,000. It will be used largely for service for the

Great Northern Railroad, which proposes to electrify its lines in this section at a cost of more than \$6,000,000.

The Board of Education, Los Angeles, has plans for a one-story manual training shop, 60 x 130 ft., at 525 North Hill Street, to cost \$30,000 with equipment. Paul C. Pape, Central Building, is architect.

The Table Mountain Clay Products Co., Oroville, Cal., is completing plans for the operation of a local clay-mining plant and will install drilling, conveying, loading and other equipment.

Sutton, Whitney & Dugan, W. R. Rust Building, Tacoma, architects, are preparing plans for a two-story automobile service, repair and garage building to cost \$45,000.

Plans for a manual arts building to be erected for the Thomas Starr Junior high school, Los Angeles, are being prepared by Roland E. Coate, architect, 608 Union Bank Building, Los Angeles.

The Capitol Foundry Co., Phoenix, Ariz., has been organized by E. C. Voss, who has been secretary and general manager of the Arizona Iron & Tool Works, and E. A. Spring, formerly manager of the Globe Foundry & Machine Works. Contract has been awarded to the Union Iron Works, Los Angeles, for the erection of a plant and a charging platform, a crane runway and a two-ton Shepard crane. The company will do a general jobbing business, specializing in grinding material for mine and mill work, in Arizona and northern Mexico.

The Inland Empire By-products Co., Spokane, Wash., will spend about \$20,000 in purchasing and installing machinery for its new plant in that city.

Canada

TORONTO, Sept. 14.

CONSIDERABLE improvement in sales has featured the machine tool market and dealers and builders who had exhibits at the Canadian National Exhibition the past two weeks state they closed for a number of good orders. The Hoyt Metal Co. is installing equipment in its new plant on Eastern Avenue, Toronto, and it is expected that additional tools will be required. The automotive industry is a steady buyer for replacement purposes.

The Anglo-Canadian Pulp & Paper Mill Co., care of the Gulf Pulp & Paper Co., 71 St. Peter Street, Quebec, plans to build a \$15,000,000 mill at Limoulu, Que. George F. Hardy, 3098 Broadway, New York, is the architect.

W. B. Brooks, president and general manager Regal Oil Corporation, 704 Confederation Life Building, Toronto, is receiving bids for equipment for a refinery at Tillsonburg, Ont.

D. C. Chisholm, town clerk, Antigonish, N. S. is receiving bids for the construction of a power plant.

Foreign

THE Minister of Public Works, Cairo, Egypt, is taking bids until Nov. 2 for sewage pumping machinery, comprising three large and one small Diesel engines, with centrifugal pumps and auxiliary machinery.

The Chihuahua Lumber Co., Chihuahua, Mex., has been acquired by new interests. The plant has been closed for a number of years and new machinery will be installed and parts of present equipment replaced for the manufacture of sash, doors and other millwork products.

The Williams Harvey Corporation, Mill Basin, Brooklyn, has acquired a one-half interest in the Wilhelmsburg Smelting Works, Hamburg, Germany, and will develop the plant for the manufacture of lead, etc. Later the German works will be extended and additional machinery installed. The National Lead Co., 111 Broadway, New York, owns a substantial interest in the Williams Harvey organization and is directly interested in the foreign expansion.

The Swedish Chamber of Commerce in the United States, 2 Broadway, New York, has received an inquiry (No. 231), from a company in Sweden desirous of getting in touch with American exporters of steam, water and gas pipe.

The Electricity Commission of Victoria, Melbourne, Australia, is taking bids until Nov. 9 for a quantity of lead-covered and armored 6600-volt cable and low-tension cable. Specifications (known as Morwell specifications No. 25/62) are available at the offices of the Bureau of Foreign and Domestic Commerce, New York and Chicago.

Trade Changes

The American Engineering Co., Philadelphia, announces the following representatives to sell the Jurulick ammonia compressor: American Refrigerating Co., 933 North Twenty-seventh Street, Allentown, Pa.; Baender Engineering Co., Parsons, Kan.; Barstow Sales Co., 1007 Locust Street, St. Louis; J. J. Bunz, 1605 East Ninth Street, Kansas City, Mo.; El Paso Engineering Co., 712 North Oregon Street, El Paso, Tex.; Harrison Machine Co., 144 Platt Street, Rochester, N. Y.; Hines Mfg. Co., 418 South Charles Street, Baltimore; Lutz & Dunn, 1715 Webster Street, San Francisco; Martin Wright Electric Co., 308 East Houston Street, San Antonio, Tex.; H. G. Miller & Co.; East 2122-24 Sprague Avenue, Spokane, Wash.; L. L. Priskey, 1318 Wildwood Avenue, Jackson, Mich.; Refrigerating Service Co., 307 Union Trust Building, Cincinnati; Rocky Mountain Engineering & Supply Co., 8 Third Street, Great Falls, Mont.; F. Ronstadt Co., Tucson, Ariz.; R. M. Shad, 430 Taylor Avenue, New Orleans; Standard Milk Machinery Co., Fifteenth and Madison Streets, Louisville, Ky.; A. A. Topp, 1347 Garfield Avenue, Indianapolis; Universal Ice Machine & Supply Co., 608 Puyallup Avenue, Tacoma, Wash.; A. T. Vick Co., 1020 Capital Avenue, Houston, Tex.; Wright-Zeigler Co., Sullivan Square, Charlestown, Mass.; Refrigerating Construction Corporation, 140 East Twenty-fifth Street, New York.

The American Cable Co. has appointed the firm of Bruntons, Musselburgh, to handle its general line, including Tru-lay wire rope and Tru-loc fittings, in Scotland. The Dominion Wire Rope Co., Montreal, Canada, is a new Canadian distributor. Other new distributors are the Marion Machine, Foundry & Supply Co., Marion, Ind.; J. Shuman Hower, 106 Foster Building, Utica, N. Y., Contractors' Equipment Co., 8 Steuben Street, Albany, N. Y., and John C. Louis, 221 South Eutaw Street, Baltimore.

The Porcelain Enamel & Mfg. Co., Eastern Avenue and Twenty-third Street, Baltimore, has incorporated the Buckeye Porcelain Enameling Co. under Ohio laws to take over the plant and equipment of the Cincinnati Enameling Co. The new company will do cast and sheet iron enameling, conforming with the usual Porcelain Enamel company's standard. Jim Gould, superintendent of the parent company's Scranton plant, will supervise operations at Cincinnati.

The A. R. Wicker Machinery Co., 322-326 Larimer Street, Denver, has taken over the machine shop of A. R. Wicker for the purpose of manufacturing centrifugal and similar types of pumps for irrigation.

The Bullard Machine Tool Co., Bridgeport, Conn., has established resident engineers as follows: Frank E. Hatch, Jr., Syracuse, N. Y.; James M. Welch, Pittsburgh; F. Archer Thompson, Detroit; Lee G. Daniels, Chicago.

The Cored Bar Corporation, 1543 Fillmore Avenue, Buffalo, has arranged with Arthur C. Harvey Co., 60 Everett Street, Allston, Boston, to represent it in that territory on Sumet cored bars, solid bars and castings.

The E. W. Bliss Co., Brooklyn, N. Y., has moved its Detroit office from the Dime Bank Building to the General Motors Building.

Takata & Co., Ltd., Tokyo, Japan, announces that its American branch office is located in the Westinghouse Building, 150 Broadway, New York. J. N. Murray is in charge.

Branch Office Representatives of The Iron Age Editorial

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Pittsburgh, Park Bldg.	O. F. Tegan
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San Francisco, 320 Market St.	W. A. Douglass

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

THE following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates		Per Lb.
Bars:		
Refined iron bars, base price.....	3.24c.	
Swedish charcoal iron bars, base.....	7.00c. to 7.25c.	
Soft steel bars, base price.....	3.24c.	
Hoops, base price.....	4.49c.	
Bands, base price.....	3.99c.	
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base.....	3.34c.	
Channels, angles and tees under 3 in. x ¼ in. base.....	3.24c.	
Steel plates, ¼ in. and heavier.....	3.34c.	

Merchant Steel		Per Lb.
Tire, 1½ x ½ in. and larger.....	3.30c.	
(Smooth finish, 1 to 2½ x ¼ in. and larger).....	3.65c.	
Toe-calk, ½ x ¾ in. and larger.....	4.20c.	
Cold-rolled strip, soft and quarter hard.....	7.00c.	
Open-hearth spring steel.....	4.50c. to 7.00c.	
Shafting and Screw Stock:		
Rounds and hex.....	4.00c.	
Squares and flats.....	4.50c.	
Standard tool steel, base price.....	15.00c.	
Extra tool steel.....	18.00c.	
Special tool steel.....	23.00c.	
High-speed steel, 18 per cent tungsten.....	70c.	

Sheets		Per Lb.
Blue Annealed		
No. 10.....	3.89c.	
No. 12.....	3.94c.	
No. 14.....	3.99c.	
No. 16.....	4.09c.	

Box Annealed—Black		Per Lb.
Soft Steel	Blued Stove	
C. R. One Pass	Pipe Sheet	
Per Lb.	Per Lb.	
Nos. 18 to 20.....	3.70c. to 3.95c.	.....
Nos. 22 and 24.....	3.75c. to 4.20c.	4.35c.
No. 26.....	3.80c. to 4.25c.	4.40c.
No. 28*.....	3.90c. to 4.35c.	4.50c.
No. 30.....	4.10c. to 4.55c.	.....

Galvanized		Per Lb.
No. 14.....	4.00c. to 4.35c.	
No. 16.....	4.15c. to 4.50c.	
Nos. 18 and 20.....	4.30c. to 4.65c.	
Nos. 22 and 24.....	4.45c. to 4.80c.	
No. 26.....	4.50c. to 4.95c.	
No. 28*.....	4.90c. to 5.25c.	
No. 30.....	5.40c. to 5.75c.	

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe		Wrought Iron	
Standard Steel		Black Galv.	
½ in. Butt....	46 29	½ in. Butt....	4 +19
¾ in. Butt....	51 37	¾ in. Butt....	11 + 9
1-3 in. Butt....	53 39	1-1½ in. Butt....	14 + 6
2½-6 in. Lap..	48 35	2-in. Lap....	5 +14
7 & 8 in. Lap..	44 17	3-6 in. Lap....	11 + 6
11 & 12 in. Lap.	37 12	7-12 in. Lap....	3 +16

Bolts and Screws	
Machine bolts, cut thread, 40 and 10 per cent off list	
Carriage bolts, cut thread, 30 and 10 per cent off list	
Coach screws, 40 and 10 per cent off list	
Wood screws, flat head iron,	
80, 20, 10 and 5 per cent off list	

Steel Wire		Per Lb.
BASE, PRICE† ON NO. 9 GAGE AND COARSER		
Bright, basic.....	4.25c.	
Annealed, soft.....	4.50c.	
Galvanized, annealed.....	5.15c.	
Coppered, basic.....	5.15c.	
Tinned, soft Bessemer.....	6.15c.	

†Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire	
BASE PRICE	
High brass sheet.....	19½c. to 20½c.
High brass wire.....	19½c. to 20½c.
Brass rods.....	16½c. to 17½c.
Brass tube, brazed.....	27½c. to 28½c.
Brass tube, seamless.....	23½c. to 24½c.
Copper tube, seamless.....	24½c. to 25½c.

Copper Sheets	
Sheet copper, hot rolled, 21½c. to 22½c. per lb. base.	
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.	

Tin Plates		Coke—14x20	
Bright Tin	Grade "AAA"	Grade "A"	Prime Seconds
	Charcoal	Charcoal	
	14x20	14x20	
IC.....	\$11.25	\$8.85	80 lb...\$6.15 \$5.90
IX.....	12.85	10.85	90 lb... 6.30 6.05
IXX.....	14.40	12.55	100 lb... 6.45 6.20
IXXX.....	15.75	13.85	IC... 6.65 6.40
IXXXX.....	17.00	15.05	IX... 7.85 7.60
			IXX... 9.00 8.75
			IXXX... 10.35 10.10
			IXXXX... 11.35 11.10

Terne Plates	
8 lb. coating, 14 x 20	
100 lb.....	\$7.00 to \$8.00
IC.....	7.25 to 8.25
IX.....	8.25 to 8.75
Fire-door stock.....	9.00 to 10.00

Tin	
Straits, pig.....	60c.
Bar.....	65c. to 67c.

Copper	
Lake ingot.....	16½c.
Electrolytic.....	16½c.
Casting.....	16 c.

Spelter and Sheet Zinc	
Western spelter.....	9½c.
Sheet zinc, No. 9 base, casks.....	12½c. open 13c.

Lead and Solder*	
American pig lead.....	10½c. to 12½c.
Bar lead.....	12½c. to 13½c.
Solder, ½ and ½ guaranteed.....	40c.
No. 1 solder.....	37c.
Refined solder.....	30½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal	
Best grade, per lb.....	75c. to 90c.
Commercial grade, per lb.....	35c. to 50c.
Grade D, per lb.....	25c. to 35c.

Antimony	
Asiatic.....	20c. to 21c.

Aluminum	
No. 1 aluminum (guaranteed over 99 per cent pure), ingots for remelting, per lb.....	31c. to 34c.

Old Metals	
The market is firmer except for scrap lead which has eased off slightly. Dealers' buying prices are as follows:	

	Cents Per Lb.
Copper, heavy crucible.....	12.00
Copper, heavy wire.....	11.75
Copper, light bottoms.....	9.50
Brass, heavy.....	7.25
Brass, light.....	6.00
Heavy machine composition.....	9.00
No. 1 yellow brass turnings.....	8.50
No. 1 red brass or composition turnings.....	8.25
Lead, heavy.....	8.00
Lead, tea.....	6.50
Zinc.....	4.50
Cast aluminum.....	18.00
Sheet aluminum.....	18.00

